The NEW ZEALAND JOURNAL OF AGRICULTURE

Vol. 66. WELLINGTON, JUNE 15, 1943. No. 6.

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THE NEW ZEALAND
JOURNAL OF AGRICULTURE
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Malting Barley in Canterbury

— By —
J. G. McKAY,
Fields Instructor, Christchurch.

THE area devoted to malting barley in the 1942-43 season is estimated to be 30,000 acres against some 20,000 acres a few years ago. This increase followed the introduction of a protected market, a minimum price schedule, and grading standards for the different grades of malting barley.

Soil and Climate

Barley is grown on a fairly wide range of soil types, but those regarded as most suitable for its growth are the medium to fairly rich, free working, uniform loams adequately supplied with lime. Climate is a most important factor in the production of good quality malting barley. The crop requires an adequate supply of sunshine for ripening. For these reasons the growing of malting barley is confined mainly to the lower rainfall districts of the South Island, namely Marlborough and parts of Canterbury and Otago where soil and climatic conditions conform most nearly to those desired. In Canterbury, where the bulk of the crop is grown, the main districts of production are Ellesmere, Lincoln, Dunsandel and Ashburton.

Place in Rotation

Barley is a rapid growing, rather shallow rooted plant, unable to compete successfully with certain weeds, and such characteristics can be said to largely determine its place in a rotation. Generally the crop is spring sown and may follow another grain crop, potatoes, roots, peas or grass. Since barley does not demand such high soil fertility as wheat, it may profitably follow the latter in a rotation. Barley is often sown on land intended for wheat when drilling of the latter crop has been so delayed by wet conditions that a successful wheat crop cannot be expected.

Autumn sowing was a common practice in parts of the Ellesmere district many years ago, but the weed problem necessitated a change over to spring sowing. The tendency, however, is to encourage autumn sowing wherever practicable, especially on the lighter, drier soils relatively free from weeds, as the grain from autumn crop is favoured by maltsters.

Cultural Methods

Preparation of the land for barley naturally varies according to soil conditions and the preceding crop. On most soils some preliminary cultivation prior to deep ploughing is desirable, although on some of the stiffer wetter areas where natural drainage is not very good preliminary cultivation is at times dispensed with. In such cases the land is simply ploughed and left in the furrow through the winter, better drainage being thus afforded, and waterlogging less likely to occur than when cultivating is given prior to deep ploughing.

Since barley is somewhat delicate in the seedling stage, and is detrimentally affected by the competition of weeds, it is important to have the land as clean as possible before sowing. To this end preliminary cultivation, besides aerating the soil to be subsequently ploughed under, usually aims also at destruction of some weeds before deep ploughing takes place. Relatively early deep ploughing ensures good weathering through the winter months, and also helps to secure strikes of objectionable weeds such as wild oats, tares and cornbind, so that these may be largely eradicated before sowing takes place. Sowings are at times delayed beyond what would be regarded as the normal sowing period for the locality in order to obtain a good strike of such weeds. Final preparation of the seed bed is similar to that adopted for other cereal crops.

Varieties

The varieties of malting barley grown in New Zealand are all of the two-rowed type and include the following: Chevalier, Plumage Archer, Spratt Archer and Goldthorpe Spratt. Of these the three first mentioned are the most widely grown.

Chevalier is one of the oldest varieties of malting barley, originating in Suffolk from a single-ear selection made by the Rev. John Chevalier in 1823, and remained the most popular variety in Great Britain for over one hundred years. The ears are long and somewhat lax; the straw also is long and inclined to be weak. The variety has therefore a disposition to go down on strong soils or in wet seasons.

Plumage Archer is a hybrid variety produced by Dr. Beaven, of Warminster, in 1905, and was introduced into New Zealand in 1927. The variety has short erect straw and does not lodge readily. It is therefore suitable for sowing on heavy soil types. Plumage Archer is a high yielder, but the heads have a tendency to break off at the neck, a bad feature under adverse conditions.

Spratt Archer is a hybrid produced by Dr. Hunter in 1908, and introduced into New Zealand in 1924. It has fairly stiff straw and a drooping head. The variety is suitable for growing on heavy land and is a relatively good wind resister.

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The illustration depicts the outstanding Stud Romney Hogget, MODEL OF MANGAMAIRE in the flock of MR. J. E. HEWITT Mangamaire. MR. HEWITT is a large and consistent user of "WONDER" MINERAL STOCK FOOD.

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FACTORIES AT PALMERSTON NORTH AND CHRISTCHURCH.

Goldthorpe Spratt was introduced into New Zealand by the Department of Agriculture in 1924. The variety has proved useful in Marlborough and has shown promise in certain southern districts.

Of the four varieties mentioned, their order of importance in New Zealand and the change over to the older variety is indicated in the table shown below:—

	1941-42	1942-43
Plumage Archer ..	27.68%	21.51%
Chevalier	26.39%	34.49%
Spratt Archer ..	19.82%	21.57%
Goldthorpe Spratt ..	7.96%	7.18%

The remaining percentages are made up of feed barley.

Growing the Crop

The current practice is to sow from 1¼ to 1¾ bushels of seed per acre according to soil conditions and period of sowing, with superphosphate at the rate of 1 cwt. per acre. A limited number of trials carried out by the Department of Agriculture indicate that increases in yield may be obtained by topdressing with sulphate of ammonia when the crop is in the early seedling stage.

Sowings commence in August and are continued on through September and October, quite appreciable areas being sown during the latter month, especially in the heavier soils. Occasional crops are sown in early November, but the chances of obtaining a satisfactory sample and grain yield are rather too uncertain for such late sowings to be popular. Usually it is only when stress of other work or perhaps a modification of the cropping programme has become necessary through weather conditions that so late a sowing is undertaken. Where autumn-winter sowing is practised, May and June are the usual months for drilling the seed, the latter being the more popular in certain situations where small birds prove destructive to those early sown crops when the grain is developing.

In the past, when autumn-winter sowing was widely practised, depredation by small birds is reported to have been unimportant. This of course is understandable, since it is those isolated early crops of all cereals which suffer most from damage by birds. Rolling of the barley is at times considered necessary to level and consolidate the seed bed when the crop is up, and harrowing, preferably with light harrows, is also resorted to for eradication of weeds. Since barley is somewhat delicate in the seedling stage, however, anything in the nature of drastic treatment at that period is generally avoided.

Sowing down pastures with barley, or sowing grasses and clovers on the growing crop in late spring are common practices, the success attending establishment of pastures sown in this way being of course largely dependent upon density of the barley crop and weather conditions. The method certainly has the merit of being cheap.

Harvesting

Since it is important that the barley crop be allowed to become fully ripe before being cut, the aim is to commence harvesting operations at that stage. As previously indicated, uniformity of soil is important in order to secure evenness of growth and ripening. Where such conditions obtain the question of deciding when best to commence cutting is comparatively easy. Uneven soils and consequent uneven ripening may, however, present greater difficulties. Some barley varieties tend to break off readily at the neck under adverse conditions, and losses may occur when early ripened patches have to stand overlong before being cut. The question then to be decided is just when to cut in order to obtain the best possible malting sample with minimum crop loss.

The bulk of the crop is cut with the binder and threshed from the stook, the length of time between cutting and threshing depending upon weather conditions. A period of ten to fourteen days in stook during fine dry weather is usually sufficient before threshing commences, with longer periods if broken weather is experienced. Windrowing and threshing from the windrow with header harvester and pick-up attachment is practised to some extent. No doubt there will be an increase in this method of harvesting the crop owing to its comparative cheapness, although the price paid for windrowed barley is less than that for stook threshed.

Threshing

In recent times attention has been drawn to the damage often done to malting barley through careless operation of both threshing mill and header harvester (with pick-up from windrow).

It is not proposed to discuss the extent of injury and its effect upon the malting properties of barley, to say nothing of the monetary loss to the farmer that can result from careless or inexperienced threshing of the crop, because this matter has been dealt with recently by various writers, and maltsters themselves have given wide publicity to the subject.

It is safe to assume, therefore, that most of those associated with the growing and threshing of barley now know the effect of germ injury, skinning and breaking upon malting barley, and the adjustments which may be made to threshing machines to reduce such injury. However, at the risk of too much repetition one might state briefly that the main adjustments necessary are:—

To open the concave and reduce drum speed to a degree consistent with efficient threshing of the grain. When drum speed is thus reduced it is still desirable to maintain the higher speed on the shakers to ensure separation of grain and straw, and this may be achieved by using sleeves of belting on the pulley which drives the belt to the shaker shaft pulley. This method of maintaining shaker speed when drum speed is reduced was, it is understood, first adopted by an enterprising threshing contractor. The condition of the crop and its relation to ease of threshing will vary through the day, due to temperature and humidity conditions, and a close watch is therefore necessary so that any alteration in drum speed and concave adjustment may be effected as soon as found desirable.

Seed Potato Certification

FOR reasons of economy, the list of growers whose potato crops have been provisionally certified by the Department of Agriculture will not appear in the "Journal" this year. Copies of the list will, however, be available on request from local offices of the Department.—Fields Division.

Gum Boots Are Not Available

THE Department of Agriculture is aware that many hundreds of persons engaged in primary production are urgently in need of gum boots. Unfortunately, however, neither the Department of Agriculture nor the Ministry of Supply is able to alleviate the position. No gum boots are available for distribution, nor is it at all probable that any shipments will arrive during the war period, despite sustained efforts in overseas manufacturing countries on behalf of the New Zealand Government to have the export embargo raised.

Garden Manures

THE question of the best manures to use with garden crops is fully discussed in bulletin No. 105, obtainable **free** from the offices of the Department of Agriculture at Auckland, Wellington, Christchurch and Dunedin.

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1 The Loan is for £35,000,000, the largest ever to be raised in New Zealand and every citizen is expected to contribute.

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4 Interest will be paid on all monies from date of receipt.

5 **SECURITY:** Both the Interest and Principal is backed by all of the resources of the Dominion of New Zealand.

6 **TRUSTEE INVESTMENT:** New Zealand Government Stock is a Trustee Investment, unless expressly forbidden in the instrument creating the trust.

7 **HOW IT IS EASY TO SUBSCRIBE:** To suit the convenience of all Investors, Stock may be purchased by payment in full at time of application or on either of the following terms:—

(I) £30 per cent. on application,
£30 per cent. on 25th August, 1943,
£40 per cent. on 6th October, 1943.

(II) £30 per cent. on application,
£10 per cent. on 11th August, 1943.
£10 per cent. on the 11th day of each succeeding month up to and including 11th February, 1944.

8 **WHERE TO GO:** Go to any Bank, Postal Money-Order Office, or Sharebroker, or the Treasury Office at Auckland, Christchurch or Dunedin, and secure a copy of the Prospectus and application form.

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(I) LIBERTY BONDS—These are available in two denominations, £10 and £1 maturing 5 years from date of issue, and returning respectively £11/7/6 and £1/2/9.

(II) DEPOSITS IN NATIONAL WAR SAVINGS ACCOUNTS—From 1/- to £1000. All Deposits made up to and including 30th June, 1943, are repayable 30th June, 1945. Deposits made on and after 1st July, 1943, are repayable 30th June, 1946. Interest credited after 30th June each year may be withdrawn within six months.

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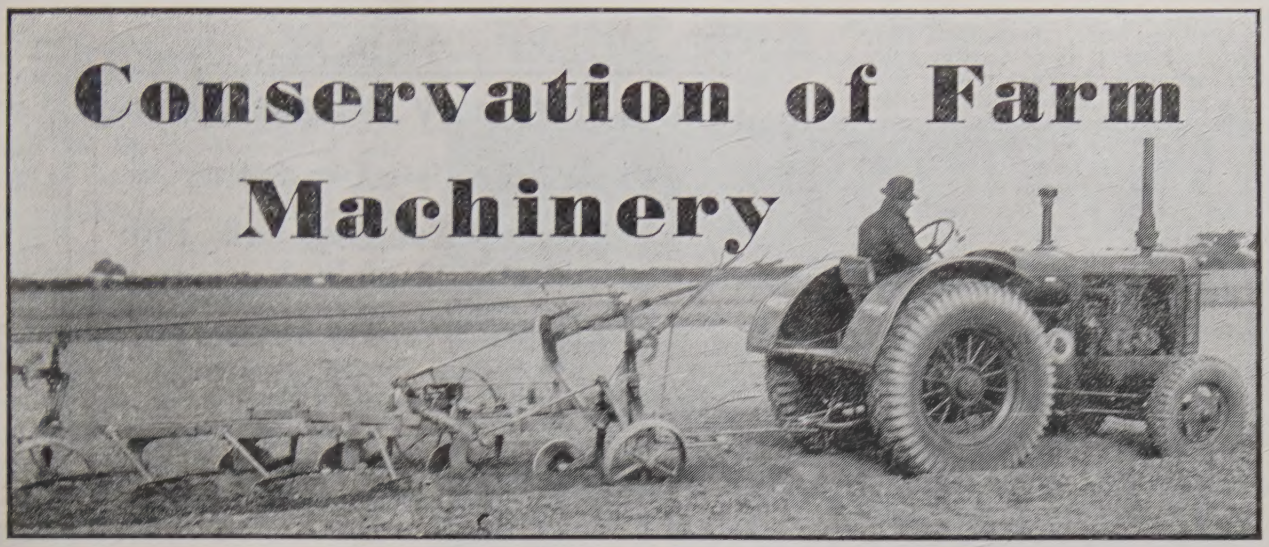
Conservation of Farm Machinery



Repairs Before Replacements

ALTHOUGH New Zealand is as yet outside the actual zone of conflict, she is nevertheless playing a creditable and worthy part. While her soldiers gain fame overseas, the civilians at home have earned the highest praise in waging the battle of supplies. While every section of the community has its contribution to make, agriculture is our basic industry and the heaviest punch must come from the farming community.

— By —
P. S. SYME,
Instructor in Agriculture,
Warkworth.

IN spite of many serious war-time difficulties, export statistics clearly show that the New Zealand farmer has played his part well, and it may safely be taken for granted that he will continue to do so. In modern farming, however, production is largely dependent on machinery, and with manufacture greatly curtailed in favour of munitions, many types of farm machinery will necessarily be in very short supply.

Weapons of War

All kinds of farm equipment, whether it be tractors, mowers, hay rakes or any other of the many tools employed, can be regarded as the farmers' weapons of war, and as such should be maintained at the highest pitch of efficiency.

Every machine or implement in New Zealand represents a considerable number of man-hours of work. From the time the metal is first mined till the machine is assembled at the factory and finally transported to the farm, it continues to absorb labour-hours in manufacture and transport. War, as everyone knows, makes particularly heavy demands on metals and transport agencies—two bottle necks which very materially influence the prosecution of the war.

An old proverb says that a pound saved is a pound gained, and it is equally true that each old machine saved for further work represents its equivalent value in man-hours and cargo space, which can thus be devoted directly to the production and transport of war material.

Policy in America

This aspect is now receiving serious attention, even in America, the home of machines. In that country vigorous propaganda concerning the maintenance and repairs of machinery is at present being sponsored by the U.S.A. Agricultural Department, in co-operation with Machinery Rationing Committees and the big manufacturing concerns. According to a recent report in an American newspaper, special emphasis has been laid on farmers **"planning to get along on the machinery they have, and getting the maximum possible usage from each machine by co-operative work, proper care, maintenance and timely repairs."** A representative of one manufacturing company pointed out at a recent meeting **"that farmers will have to get along mostly with the machinery they now have, because manufacturers are just not getting the metal to manufacture new machines."** He also said **"that farmers would soon recognise the seriousness of the situation,"** and he hoped **"that they would repair and conserve their farm machinery as never before, by patching and making the worn-out machinery go the limit."**

This is advice given by machinery experts in industrial America to farmers on the spot. Obviously it applies with even greater force to farmers in an agricultural country like New Zealand, which is isolated in the Pacific, many thousands of miles from

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the factories where most of the farm machines are made. Since, from every point of view, it is at present much more economic to repair rather than to replace worn implements, manufacturers in America are concentrating specially on the provision of ample spare parts, and recent figures show that the stocks of these now held by dealers are 160 per cent. in excess of the 1940-41 figure.

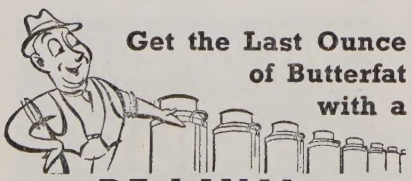
Quite apart from the man-hours involved in making a complete machine, the difficulties involved in transporting it to New Zealand are very real indeed, and it is evident that the substitution of spare parts likely to be needed, instead of complete machines, can effect a very appreciable saving in shipping space.

Avoid Peak Loading

Since most farm operations tend to be seasonal in nature, it is evident that this is apt to result in a series of peak loads being placed on local repair depots. If, however, each machine is overhauled before being laid away for the next season, and any necessary repair parts ordered at once, this will help to even out the load on our machinery firms; furthermore, it will help to reduce the risk of a machine being out of commission in a busy period on account of a glut of repair work, or because a spare part is not immediately available.

Handling and Maintenance

Needless to say, special attention must also be paid to the most efficient handling and maintenance of machines on the farm. In order to assist farmers in this direction a special series of articles dealing with different types of farm machinery in general use will be featured in this journal. These articles will be specially prepared by various experts, and, if carefully studied by farmers and operatives, will materially help to keep old wheels turning until new imports once more become freely available.



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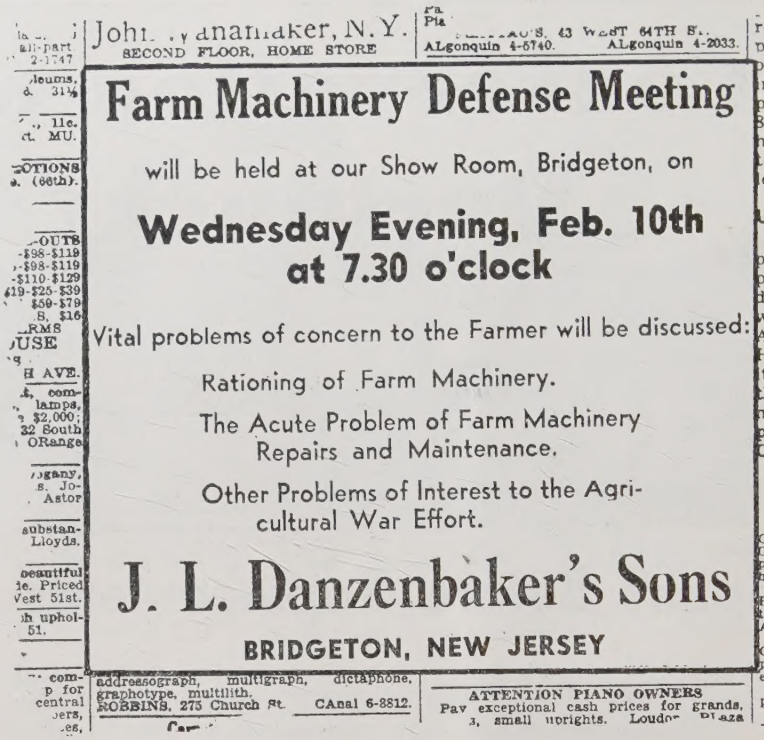
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Farm Machinery Defense Meeting
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Vital problems of concern to the Farmer will be discussed:
Rationing of Farm Machinery.
The Acute Problem of Farm Machinery Repairs and Maintenance.
Other Problems of Interest to the Agricultural War Effort.
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Pay exceptional cash prices for grands, small uprights.

This advertisement appeared in the "Evening News," Bridgeton, New Jersey, U.S.A. A report of the meeting is reprinted below.

Farmers Confer Over Equipment

THE first of a series of meetings on maintenance and repairs of farm machinery sponsored by the Vocational Agricultural Department in co-operation with other agricultural agencies was held at the Danzenbaker Show Rooms in Bridgeton. J. Everett Bowen, agricultural teacher, presided at the well attended meeting which was held for the purpose of explaining the farm machinery situation to the farmers.

Loren W. Elwell, chairman of the farm machinery rationing committee, explained the farm machinery rationing setup in the country. The committee is doing a splendid job in rationing the few machines that are still available to where they will do the most good in producing the most food for the war effort. This is quite a difficult task since there are several times as many applicants as there are pieces of equipment to go around.

Wilbur M. Runk, County Agricultural Agent, stressed the fact that farmers should plan to get along on the machinery they have, and to get the most usage out of it by co-operative work, lending and borrowing, and by proper care, maintenance and timely repairs. He reported that repair parts are more available now than in previous months and that present figures show repair parts on hand by dealers are 160 per cent. of the 1940-41 figure.

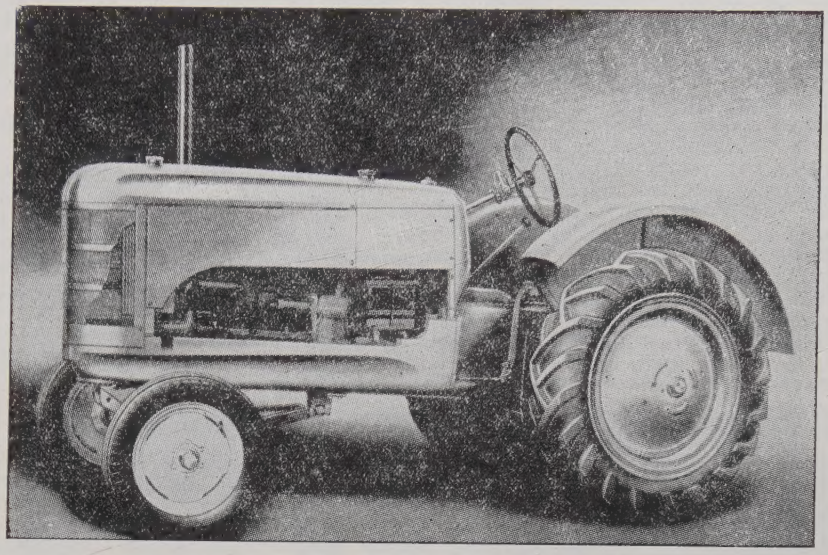
Hunter and Howard Danzenbaker presented the farm machinery dealers' view of the problem, stating that dealers were very anxious to assist the farmers with their machinery repair problems, and they hoped that the farmers would not wait until the season was upon them before they asked for parts and assistance. Howard Danzenbaker showed two reels of motion pictures, farm activities in England during wartime.

R. E. Graff pointed out that farmers will have to get along mostly with the machinery they now have because manufacturers are just not getting the metal to manufacture new machines. He said that farmers would soon realise the seriousness of the situation and hoped that they would repair and conserve their farm machinery as never before by patching and making their worn-out equipment go the limit.

As a result of the enthusiasm shown by the farmers, plans are being made to hold meetings for instruction on repairing and maintenance of farm machinery on Mondays, Tuesdays and Wednesdays of each week for the next several weeks. Major companies will be represented to discuss various types of machinery and their care. It is hoped by all those co-operating in this patriotic move, that farmers will take advantage of all the valuable instruction these meetings will offer.

YOUR FARM TRACTOR

Today farmers are bidding keenly at auction sales for farm power, and modern tractors are bringing phenomenal prices, far exceeding new quotations, simply because new tractors have been unprocurable. This condition has been brought about, not only by scarcity of shipping, but also because tractor factories are busy manufacturing war materials. Since the outbreak of war farmers throughout the world have been urged to increase production, and none has responded better to that call, nor accomplished more, than have the farmers of New Zealand.



Motor Maintenance

IN this "Food for Victory" campaign, tractors have played, and will continue to play, an important part. It is not untimely to record in this issue suggestions relating to the service and maintenance of tractors.

Commencing with the heavy, slow-moving, cumbersome tractors of approximately forty years ago, progress in engineering has brought to light modern mobile economical units, which, with proper care and maintenance, are capable of many hours of trouble-free service.

Accompanying every new tractor is a service manual which explains in detail correct operating and servicing; but unfortunately, as with the motor car service manual, only a percentage read it, and probably only a small number give the manual the study it deserves.

A careful operator is the best insurance against mechanical and other incidental troubles which can invariably be traced to some oversight or neglect on the part of the operator. Nowadays the modern tractor is handled by men and women, but it is not necessary for the operator to be a qualified mechanic in order to run the unit successfully. If the simple rules for care and maintenance as set out in the service manual are followed, the owner will save himself a good deal of worry, loss of time, and expense.

The Motor

Strict attention to the motor is essential to ensure continuous and satisfactory tractor service. The following is outlined as a guidance for all tractor owners and operators.

All lubricating oil and greases should be kept free from dust and water. For preference, the container used for filling the crankcase should be fitted with an airtight lid, as an open container collects fine dust from the air on the oily inside surface between oil changes, and when fresh oil is poured into the container for refilling the crankcase, this fine dust comes off the inside and passes into the crankcase.

Use every precaution to prevent dirt reaching into the working parts by keeping the outside of the motor clean. Practically all wear is directly trace-

HOW MANY HANDS HAVE YOU?

Not sufficient for these busy days! Running water is a boon on any farm and it's especially needed today, when farmers face the biggest producing job in generations.

Plan now to install an up-to-date water system. Direct water supply, tank storage, pressure system..... for watering stock, orchards or gardens. Invest in a

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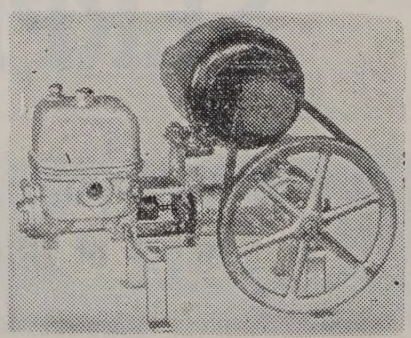

200 gallons per hour capacity and a pressure of 50lbs. or a head of 115ft. Speedwellettes carry a 12 months guarantee backed by 30 years' experience and tradition of service.

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Please mention Journal of Agriculture when enquiring.

able to abrasive in the lubricant. Efficient oil cleaners and air cleaners are provided to protect the motor in dusty conditions, and should be serviced more frequently when the tractor is working where the dust is thicker.

Oil Bath Air Cleaners

In some parts of the world the abrasive dust is so severe that the oil bath air cleaners require to be cleaned every two hours of operation. It is generally accepted that, in this country, under the worst conditions, the same oil bath air cleaners should be cleaned every ten hours of operation, but it is inadvisable to accept a general rule of this kind. Considering that it is practical to change the oil in the air cleaner every two hours in some parts of the world, there is every likelihood that the air cleaner is not operating efficiently after the same period in many dusty conditions in New Zealand.

The oil used in the air cleaner should not be a heavy oil, as the heavy oil does not bubble and spray over the cleaner element which collects the fine dust, and it is necessary for this fine spray of oil to reach the filter element so as to carry the fine dust that has collected on the filter element down to the oil cup where it lodges. It takes only a few moments to clean out the air cleaner, and in the light of the consequent detrimental effect on the working parts of the engine, as created through the neglect of this operation, the careful operator will use good judgment, and see that the air cleaner is attended to as often as working conditions require. Servicing the oil washed air cleaner is a simple matter. Briefly it involves the following process—

1. Remove oil cup—empty oil—scrape out dirt.
2. Fill to oil level bead with engine oil and replace cap securely. Never change the oil in the air cleaner while the motor is running, as the suction from the carburettor will draw in fine particles of dust. Check closely the connections between the carburettor and the air cleaner to see that they are air-tight.

Changing Crankcase Oil

When conditions are extremely dusty, the oil should be changed more often. The means for inspecting the crankcase oil should be frequently used by the operator. If the oil lacks body when compared with new oil, or appears to be contaminated with grit or dirt, then change it immediately or engine wear will take place. Highest grade oil will become unfit for use through contamination with foreign elements which accumulate in the crankcase. Lubricating oil is made up of a large number of chemical compounds. All oil tends to oxidise, and when oxidation takes place some of these compounds are changed to others less desirable for lubrication.

It should also be borne in mind that a certain amount of sediment clings to the bottom of the crankcase, and this will not drain off when the oil is changed. It is therefore necessary to remove the pan twice a season at least, and clean same as well as the oil screen. It is always advisable to use new gaskets when replacing the pan.

To prevent water from condensing in the crankcase, and the formation of sludge which may freeze and clog the oil inlet screen, the oil requires changing more often in the winter months than in the summer months.

Engine Oil Filter

Most modern tractors are fitted with an oil filter, and this filter is effective only as the oil passes through it. The time as recommended by the manufacturers for the replacing of each type of oil filter should be strictly adhered to, as its utility practically ceases if used beyond the recommended time. Oil is the blood stream of the tractor, and must, as far as possible, be kept free from impurities.

Challenge

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Some tractors are fitted with replaceable elements and others are fitted with elements that can be cleaned. The object of the oil cleaner is to remove solid particles from the oil, and when the filter becomes clogged the oil simply by-passes around the filter without being cleaned. Abrasives are then allowed to pass through the oil line into the bearings and cylinders, and wear takes place.

Some tractors are fitted with an oil filler cap air cleaner, which is used as a crankcase breather, and it is most important that this should be washed in kerosene or petrol once each day, or, in very dusty conditions, every four hours. After it is washed and dried, it should be dipped in fresh oil about S.A.E. 50, drained and replaced.

Oil Pump

Modern tractors have the moving parts of the engine set to close clearances and a high pressure oil pump is fitted in the oil sump to force the oil through the bearings. A certain pounds pressure per square inch is recommended by the manufacturer, and an indicator gauge is located within view of the operator. Some of the causes of improper oil pressure are as follows: —

Lack of oil in the crankcase—broken oil lines or tubes—leaky connections in oil lines or tubes—defective oil gauge—improper viscosity of oil—loose main connection rod bearings—pump relief valve stuck—clogged oil pump—thick pump cover gasket—worn oil pump gears.

If the oil gauge hand drops back, stop the engine immediately and investigate.

Cooling System

When filling the radiator, always use clean water, preferably soft rain water. About once a month remove both drain cocks, and flush out the cooling system with clean water until all accumulated sediment is washed out.

Clean the radiator screen occasionally, and never allow chaff, leaves, or other matter to collect in front of the radiator to obstruct the free passage of air between the cooling tubes.

The tension on the fan belt should be from 40 to 50 pounds.

When tractors are fitted with a generator, never use a pry bar against the generator to tighten the fan belt, as an over-tight belt places undue stress on the fan and generator bearings.

Engine Adjustment

It is a well-known fact that the performance of an engine is only as good as its adjustment. Even the most modern, highly efficient engine will give a very poor performance if it is out of adjustment. It is significant, however, that an engine which is correctly adjusted to the fuel being used, and is lubricated, gives the absolute minimum of trouble, even though it is subjected to very hard slogging work over long periods. On the other hand, one small part that is out of adjustment may, if not immediately rectified, bring with it a trainload of troubles, and here it should be stressed that where the operator is not thoroughly conversant with the mechanism of the engine, he should on no account make adjustments to intricate parts. If there is any doubt in the operator's mind that his tractor is not performing well, and that the power has fallen off suddenly, the service manual will indicate what is wrong by the way the tractor performed when the trouble occurred.

Overloading Engine

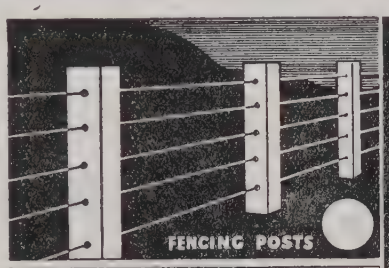
Never place a load behind your tractor that causes the engine to labour. Any load that reduces the normal engine speed when the throttle is fully open is an overload.

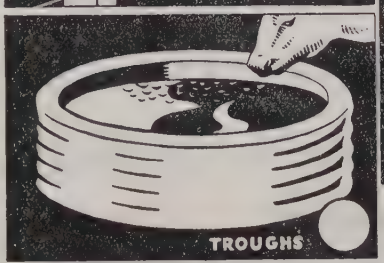
Safety First

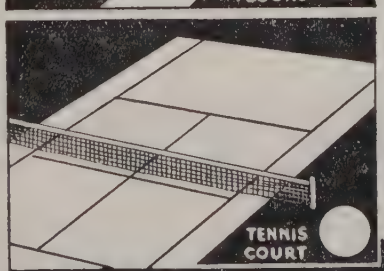
Most accidents occur by the failure of some individual to observe the simple and fundamental rules and precautions for safety. Regardless of the care used in the design and construction of a farm tractor, there are points that cannot be completely safeguarded without interfering with accessibility and efficient operation.

As mentioned earlier, a careful operator is the best insurance against troubles or accidents.

The complete observance of one simple rule would prevent many thousand serious injuries each year. That rule is: "Never attempt to clean, oil or adjust a machine while in motion."







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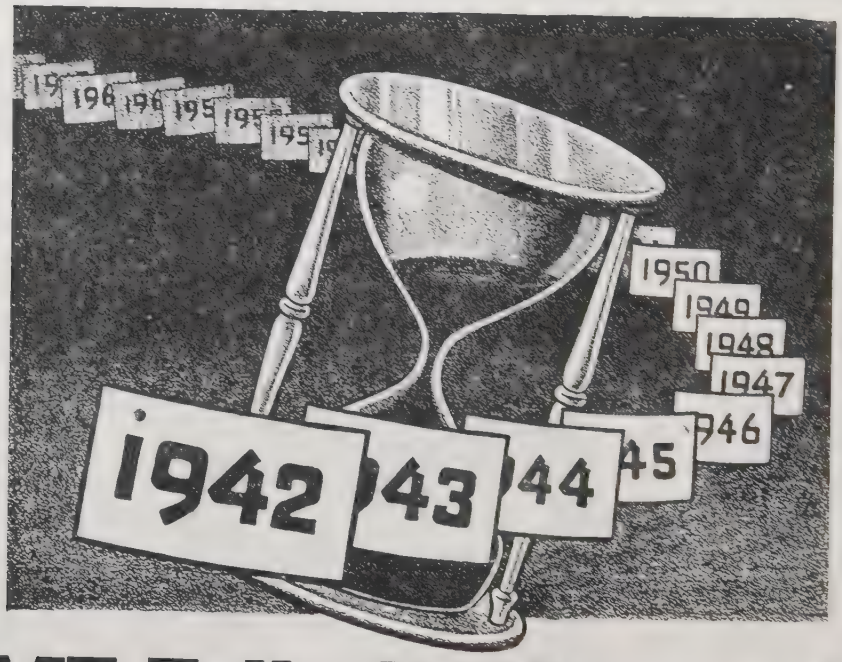

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Conditions arising from the war, particularly shortage of staff and petrol rationing, have made it difficult for the suppliers of separators to maintain their former servicing staff, and farmers therefore have frequently

THE CREAM SEPARATOR

to rely on their own efforts when minor faults occur. The following points have been drawn up with a view to illustrating the simplest methods of making minor separator adjustments on the farm.

THE six most frequent faults which occur with separators are dealt with hereunder:—

(1) LOSS OF BUTTERFAT IN SKIM MILK.

The standard of clean skimming is as follows:—

Skim milk tested by the Babcock method, 0.01 per cent.

Skim milk tested by the Butyl-Alcohol method, .07 per cent.

If the separator is not giving these results, look to the possible causes set out below:—

(a) **Speed.** It is essential that the crank handle or large driving wheel of the separator should be turned at the correct speed as specified by the manufacturers. Make sure that the speed indicator bell is in good working order, as even a few revolutions under speed cause loss of butterfat in the skim milk. The ringing of the bell indicates that the separator is running under speed.

(b) **Height of Bowl.** Your bowl may be set too high or too low in the frame. If a bowl height gauge was supplied with the separator, this should be used as directed. If you are without a gauge, check the distance between the upper edge of the cream cover and the bottom of the cream screw lug on the top disc, which should be about one-twenty-fourth of an inch, or the thickness of a sixpenny piece. If the bowl is not in this position, raise or lower by means of the bottom screw which, on most separators, is on the outside of the frame directly beneath the bottom of the bowl spindle.

(c) **Float.** This must always be used. Shake the float to make sure that no milk has got into it. See that the tap fits directly over the centre of the float. Feeding on the side of the float often accounts for bad results.

(d) **Temperature.** You may be allowing your milk to cool too long before separating. Milk should be separated as near to blood heat as possible. Separating at too low a temperature is a cause of loss of butterfat.

(e) **Cleanliness.** The milk should be strained before separating. This will ensure cleaner skimming for a longer time during each run. Thoroughly clean the slime from the bowl and discs after each operation. Do not omit to clean the underside of the discs.

(f) **Capacity.** The separator may not be large enough for the size of the herd. A separator should not run longer than an hour during each separation. After this time the slime that has collected on the discs interferes with the process of separation, and loss of fat in the skim milk is the result. The following is a guide to the correct size of separator to be used:—

15 to 20 cows, 35-gallon separator.
20 to 30 cows, 55-gallon separator.
30 to 40 cows, 75-gallon separator.
40 to 50 cows, 100-gallon separator.
50 to 65 cows, 125-gallon separator.
65 to 80 cows, 150-gallon separator.

(2) CREAM TEST TOO HIGH.

If the cream is too thick this may be overcome by adjusting the cream

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screw. On the majority of separators, thinner cream can be obtained by turning the cream screw outwards, or to the left. If this does not give the desired result, check the speed of the separator, as even two or three revolutions above the prescribed speed can account for a high cream test. Thirdly, if the separator is being fed below its rated capacity, and the bowl being "starved" in consequence, this would also tend to give too high a cream test.

(3) CREAM TEST TOO LOW.

If this cannot be corrected by turning the cream screw inwards, or to the right, then the separator is probably running too slowly. This could be caused either by belt slip, or by the use of wrong sized pulleys on the separator drive or on the countershaft.

It may be that the milk vat is too high. If so, lower the vat, or raise the separator to the level which will correspond with that of the vat supplied with the machine.

(4) SEPARATOR HARD TO TURN.

Look for the cause of this in the following directions, and remedy where necessary as advised:—

(a) The oil may be too thick and gumming up the bearings. If so, you should immediately change the brand of oil you are using. It should be borne in mind that as the separator bowl and spindle revolve at about 7000 revolutions per minute, this high speed demands much more specialised lubrication than any other machine or implement in use on the farm.

(b) The neck bearing spring in your separator may be broken or damaged and require renewing. Once the new part has been procured this bearing can be replaced in the separator without difficulty.

(c) The bowl may be set too high and may be rubbing against the skim milk cover. If so, the bowl should be lowered slightly by adjusting the bottom screw as already described.

(5) SEPARATOR GEARING UNDULY NOISY.

This may be due to the bronze wormwheel or the bowl spindle having become badly worn in the teeth where these two units engage, but if the separator is equipped with ball bearings, it is much more likely that the cause of the noise or rough running will be traced to defective ball races. The only remedy in this case is replacement of the faulty parts.

(6) BOWL VIBRATION.

This may be caused by any of the following:—

(a) The neck bearing may be badly worn, or alternatively, the neck bearing spring may be broken or damaged. If so, the remedy is to replace the worn parts.

(b) The cause of bowl vibration is frequently traced to the bowl nut not being screwed down tightly enough. The nut should be well tightened with the bowl spanner without undue pressure being exerted.

(c) Make sure that the bowl has proper disc compression. By this is meant that when the bowl hood is screwed down with the bowl nut, it should slightly press the discs down, thus assuring that the discs will be held firmly in place during separation. In most bowls the discs gradually settle down after a season or two, so that they become slightly loose in the bowl. The addition of one or two extra discs will overcome this.

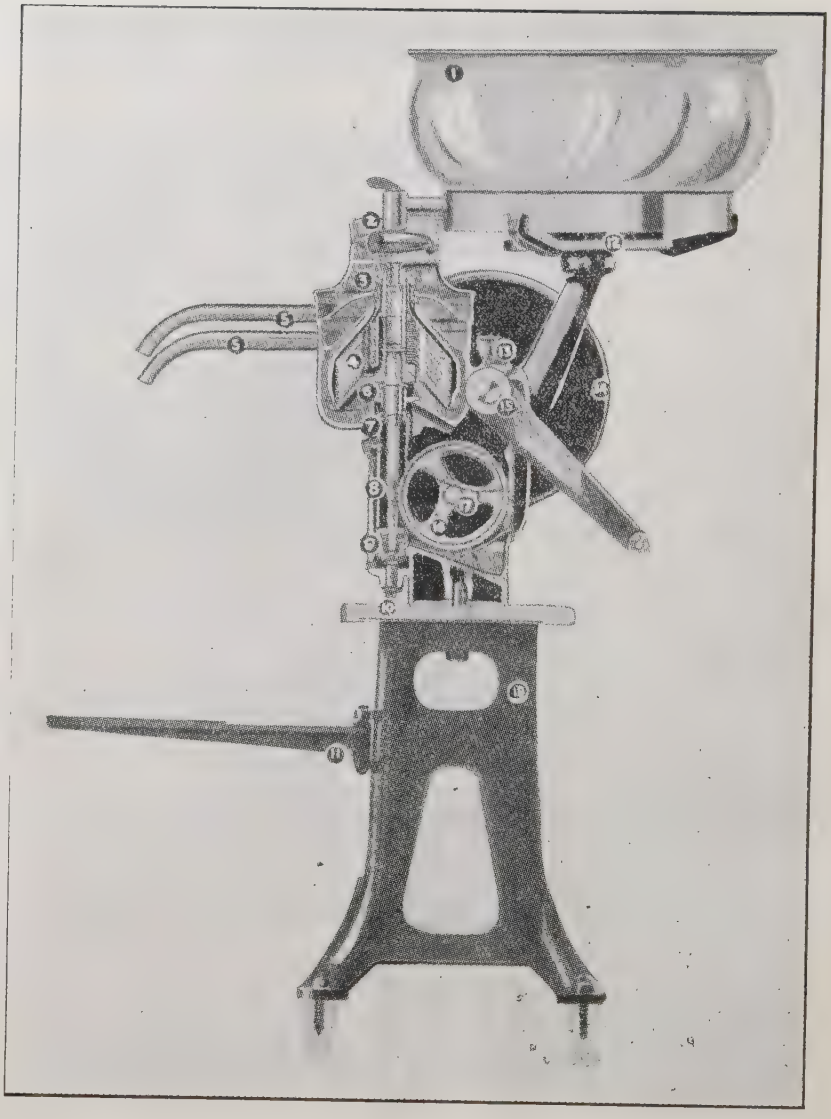

ILLUSTRATION OF A STANDARD MODERN SEPARATOR.

(1) Supply Can. (2) Tin Covers and Float. (3) Regulating Screw for thickness of cream. (4) Bowl Discs. (5) Cream and Skim Milk Spouts. (6) Protecting Covers for Bowl Spindle and Bearings to prevent spilt water or milk entering the interior of frame. (7) Bowl Spindle Upper Ball-bearing. (8) Bowl Spindle and Ball-bearings encased in steel tube. (9) Bowl Spindle Lower Ball-bearing. (10) Bowl Spindle Adjusting Screw. The whole tube and spindle can be raised or lowered by means of this screw. (11) Adjustable Cream Can Shelf. (12) Clip for Holding Bowl. (13) Small quantity of fresh oil introduced daily. (14) Gear Wheel. (15) Crankshaft Bearings. (16) Bell Special Indicator (gear wheel side). (17) Intermediate Spindle. (18) Gear Wheel. (19) Stand.

MANGEL POISONING IN PIGS

— By —

I. G. McINTOSH and R. L. NIELSON, Animal Research Station, Wallaceville, and W. D. ROBINSON, Veterinarian, Dunedin.

IN the "Journal of Agriculture," October, 1942, the attention of farmers was drawn to a large scale mortality in pigs following the use of cooked mangels as the bulk feed. The circumstances surrounding the loss of these 200 pigs were reported fully in that article and only the essential points will be repeated.

The mangels were pulled in the afternoon and the same evening cooked in a large concrete vat for about two hours by passing superheated steam through the mixture of pulped mangels, fat and minerals. The cooked mixture was left in the vat overnight, and next morning, after the addition of meat meal and grain, the mixture was fed out to 600 pigs. About half an hour after feeding commenced pigs started to die, 200 being lost in three hours. Deaths occurred fairly rapidly, and in a number of cases symptoms of pain were manifested. Muscular weakness, followed by laboured respiration was observed, death ensuing from asphyxiation, generally preceded by convulsions. These symptoms together with the post mortem findings were consistent with nitrite poisoning, and furthermore, the Government Analyst, Christchurch, demonstrated the presence of considerable amounts of nitrite in the feed. A diagnosis of nitrite poisoning was reached and confirmation of this diagnosis was provided later by comparison with symptoms induced by experimental nitrite poisoning in pigs.

Further Mortality

It was at first considered that the original mortality was due to the fact that the mangels used had been freshly pulled, and not pitted or clamped for the usual six weeks to two months. Accordingly, the farmer immediately ceased the feeding of mangels, and pulled and clamped the crop. Seven weeks later he again started to use cooked mangels as the bulk feed, and after three days two pigs died, the symptoms and post-mortem appearances being similar to those seen at the time of the original mortality. Other pigs were affected, but fortunately no further deaths occurred.

Facilities for experimental work were available on the farm, and the investigations which followed were designed to show:—

(a) Whether clamped mangels, when cooked, were as dangerous as the fresh roots when cooked, and

(b) What factors were operating to make cooked mangels sometimes dangerous and sometimes safe.

Methods of Cooking

At the time of our visit other foodstuffs were being cooked in the manner already outlined, and we were able to gather complete information on the temperatures reached, the times of cooking, the rates of cooling of the vats, etc. Pulped mangels with water and minerals were then cooked similarly, but on a smaller scale, 320 lb. lots of mixture being taken instead of the usual 6,000 lb. Samples were taken for analysis immediately on completion of cooking, and after about 24 hours. Two batches of material were cooked in the first experiment, some of the feed from each batch being fed to two pigs on the day following cooking.

The following table summarises the results.

TABLE 1.

	Vat 1.	Vat 2.
Total time of heating .. Includes	3¼ hours .. .. 50 minutes at 190 deg. F. ..	25 minutes. Reached 170 deg. F. and then steam turned off.
Presence of nitrite on completion of heating ..	Absent	Present (amount not determined).
Amount of nitrite nitrogen present 24 hours after cooking	7 grains* per gallon (10 lb.)	9 grains per gallon (10 lb.).
Fed to two pigs of	40 lb. weight each	70 lb. weight each.
Symptoms	Consistent with non-fatal nitrite poisoning.	Consistent with non-fatal nitrite poisoning. (Milder than in other pair of pigs).
Amount of food eaten by two pigs by next morning ..	11 lb. (approx.)	23 lb. (approx.).

* 1 grain nitrite nitrogen = 4.9 grains sodium nitrite.

In this experiment the cooking was carried out in tubs instead of in the large vats normally used on this farm. No change was made in the method of cooking, and precautions were taken to ensure that the rate of cooling approximated as closely as possible the rate observed in the large vats. The temperatures reached were comparatively low although both tubs appeared to be boiling quite vigorously. In both vats the methods of cooking employed resulted in the production of considerable amounts of nitrite, the material which was thought to have been responsible for the poisoning of the two hundred pigs. The amount in vat 2 (9 grains nitrite nitrogen per gallon) was nearly as high as that reported originally by the Government Analyst (9.3 grains per gallon), while the concentration in vat 1 was not much lower. Material from both vats was shown to be poisonous to pigs, two of which showed serious symptoms.

The animals fed from vat 1 consumed in about a day 11 lb. of feed containing 7.7 grains of nitrite nitrogen, or roughly 3.85 grains each, while those fed from vat 2 consumed roughly 10.3 grains each. It is interesting to note that in vat 1, at least, no nitrite was present at the completion of cooking, while large amounts were present twenty-four hours later. Nitrite was present in vat 2 in undetermined quantities at the completion of cooking, but the absence of laboratory facilities on the farm prevented our determining the actual amount. These facilities were available, however, at some distance from the farm, permitting us to analyse the twenty-four hour samples. Since these experiments were carried out comprehensive studies on the subject of nitrite poisoning in pigs have been conducted at the Wallaceville Animal Research Station. Typical results obtained in these latter experiments, which were necessitated by the lack of published data on the subject, are quoted for comparison. A 38 lb. pig died in 100 minutes after eating 3.6 grains of nitrite nitrogen (fed as sodium nitrite) in a grain mash, while a 71 lb. pig died within 90 minutes after eating 8.6 grains fed similarly.

All four pigs in the experiment under discussion thus had dangerously high doses, and the fact that no deaths occurred is not of great significance when the individual variations in susceptibility of animals to poisons are considered. It is fairly certain, also, that the food eaten was taken over a much longer period than in the case of the Wallaceville experiments. This point is important when coupled with the fact that animals can be showing

all the effects of severe nitrite poisoning one day, and be completely recovered the next.

A point that must be strongly stressed is that the mangels used in this experiment had been clamped for two and a half months previously. The fact that poisonous feed was produced necessitated a revision of the opinion that clamped mangels would be safe to feed after cooking. **The first experiment thus showed that the two methods of cooking employed produced a poisonous feed from mangels clamped for a considerable period.** It is likely that these conditions obtained at the time of the original mortality.

Having demonstrated that these methods of cooking resulted in the production of dangerous amounts of nitrite, we set out to find under what conditions a safe feed could be obtained. The first point to be studied was the effect of temperature of cooking on the production of nitrite. We had noticed that when a vat heated by live steam appeared to be boiling its temperature could be as low as 170 deg. F. to 180 deg. F. (by thermometer), i.e. considerably below boiling temperature (212deg. F.). We decided to investigate the effect of boiling for various times on the production of nitrite, using 6,000 lb. batches of mixture in the vats. The results of this experiment are shown in Table 2.

TABLE 2.

	Vat 3.	Vat 4.
Total time of heating .. Includes	2¾ hours	4¼ hours (approx.).
	½ hour at 206 deg. to 208 deg.F.	2 hours at 209 deg. to 210 deg. F.
Presence of nitrite on completion of heating ..	Absent	Absent.
Amount of nitrite nitrogen present 24 hours after heating	4 grains per gallon (10 lb.)	0.2 grains per gallon (10 lb.).
Fed to	2 pigs 80 lb. weight each ..	Whole herd of approx. 800 pigs.
Symptoms	Consistent with non-fatal nitrite poisoning. (Similar to those fed from vat 2).	No symptoms.
Amount eaten by next morning	2 pigs, 14½ lb. (approx.) ..	All eaten.

In this experiment it was not possible to raise the temperature of either vat completely to the boiling point, but in neither case was it much below it. As was found in the case of vat 1 in the first experiment, neither of the freshly cooked feeds contained any nitrite at the completion of boiling, but it was present in fairly large quantities (4 grains per gallon) next day in the contents of vat 3. A feeding trial again showed the material from the latter vat to be moderately poisonous. The two pigs between them ate the small amount of 14½ lb. of feed containing 5.8 grains of nitrite nitrogen, or roughly 2.9 grains each. From the results of the Wallaceville experiments we would expect about 11 grains to kill an 80 lb. pig. A level of 4 grains per gallon would still be dangerous to small pigs.

The material from vat 4 (about 6,000 lb.) after being analysed was pronounced safe to use, and was fed out to about 800 pigs without any untoward results. Maintaining the temperature of the vat close to boiling for two hours resulted in almost complete prevention of nitrite formation. Maintaining the temperature at approximately the same level for only half an hour resulted, however, in the formation of the comparatively high amount of 4 grains of nitrite nitrogen per gallon. Small scale experiments were undertaken to determine whether this period of two hours could be shortened. In cases where the boiling period was less than two hours appreciable amounts of nitrite were present twenty-four hours later. **These experiments showed conclusively that cooking at or near boiling point for at least**

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two hours was necessary to produce a safe feed.

Since the main purpose of this investigation was to study the methods of cooking mangels in relation to the production of poisonous food, it is not proposed to discuss the source of nitrite at any length. It is almost certain, however, that it is derived from nitrate present in the original mangels. The method of conversion of nitrate to nitrite has already been studied at some length at the Wallaceville Animal Research Station, but up to the present conclusive results have not been obtained. It is worth recording that the mangels used in the experiments described in this article, after being clamped for two and a half months, had substantially the same nitrate content as similar mangels when freshly pulled.

Discussion on the question as to whether mangels should be cooked or not is outside the scope of this article, but if cooking is done, it must be carried out effectively if mortalities from nitrite poisoning are to be avoided. A considerable difference of opinion exists in regard to the advisability of feeding freshly pulled raw mangels. It is hoped that information on this point will be obtained in the near future.

Conclusions

1. This investigation was concerned only with the toxicity of cooked mangels, the suitability of raw fresh mangels not being considered.

2. Mangels cooked at temperatures below boiling point, or for too short a time at boiling point, were shown to be dangerous to pigs owing to the amount of nitrite formed during cooling.

3. From the point of view of nitrite poisoning, mangels which had been clamped for a considerable time produced dangerous feed if cooked as described in the preceding sentence.

4. Production of nitrite on cooling may be avoided by boiling mangels for at least two hours at or near boiling point. A thermometer is necessary to decide when this point has been reached.

Acknowledgments

We wish to acknowledge the co-operation of the owner of the farm who placed all his facilities at our disposal, and also the co-operation of the Government Analyst, Christchurch, who, besides carrying out a considerable amount of analytical work at the time of the first heavy mortality, permitted us to work in his laboratory during the investigation.

Reference: Robinson, W. D. (1942). "Mangel poisoning in pigs." N.Z.J.Agric. 65:4, 199-202.

Cobalt Sulphate

IN an article referring to "Bush Sickness" in the March, 1943, issue of the "Journal" it was inferred that merchants could obtain supplies of cobalt sulphate only from Imperial Chemical Industries Ltd. The Department has since received advice that Dalgety & Co. Ltd., Auckland, are holding stocks of cobalt sulphate.

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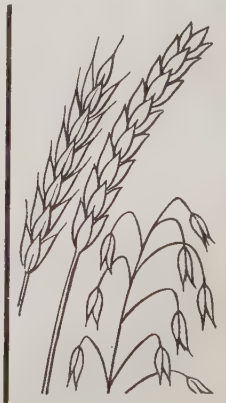

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Practical Methods of Constructing Wire Fences

— By —
E. B. GLANVILLE,
Acting Fields Superintendent,
Auckland.

HAVING first marked out the line or boundary to be fenced and having the material required laid on the line, it is then necessary to proceed with the erection of the strainers which are usually placed from ten to twelve chains apart. If the country is steep and hilly it is better to choose suitable places rather than adhere to any decided distance.

The Strainer

The strainers should be eight feet long and ten inches in diameter, and that portion which is above the ground should be adzed square. After squaring draw a line down through the middle of the "fair" side of the strainer and gauge the respective distances for the wires; the holes should then be bored with a ¾-inch auger to take the wires. The gauge between the wires in shown in the diagram of strainer (Figure 1) and for a seven-wire fence is considered to be effective for either subdivisional or boundary purposes, and places the top wire three feet ten inches from the ground.

The slot for the strut should then be mortised out 2½ inches wide by 5 inches long and 2½ inches deep, this allowing for the insertion of a good strong stay.

There now remains the foot to be mortised in the strainer, about 15 inches from the bottom, and on the fence line face (as illustrated), which should be a piece of timber three inches by four inches or thereabouts and three feet six inches long. It should fit tightly and be let in to the face of the strainer and securely wired over by three or four crossings of wire.

The length of this foot is of great importance (it should not be too short) as it maintains the pressure which is brought to bear by the strained wires.

The strainer is now ready for erection and for an eight-foot long strainer a hole four feet deep will be required. It should be four feet long to admit of the foot going down easily and should be no wider than one can just work in, two feet at the most and dug out on the trench principle, long and narrow. This saves a lot of useless earth being thrown out and also leaves a good back wall for a chock to be jammed down tightly to the heel and back of the strainer. This is essential and is important in that it keeps the strainer rigid and prevents "creeping" after the wire pressure is on.

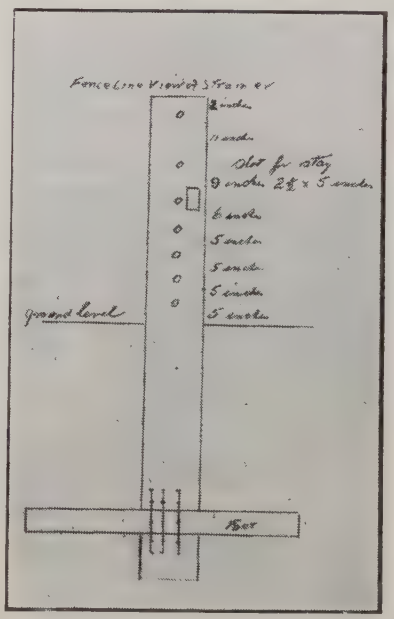

Fig. 1.—Fence line view of strainer, showing method of attaching foot to strainer.

The method of footing is shown in the illustration (Figure 2) and has proved to be very effective and reliable in all grounds. This consists of mak-

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ing two deep nicks in the earth just above the foot on either side of the strainer. Do the back ones similarly, but with a deeper angle. The measurements should be taken of the length of timber required to fit into these nicks. The measurements should be on the full side, so that when the crosspieces are inserted and driven down with the bar they should be perfectly tight and have a strong hold. If a crosspiece is cut too short it should be discarded; it is useless unless it fits tightly and well. The earth can then be rammed to the surface.

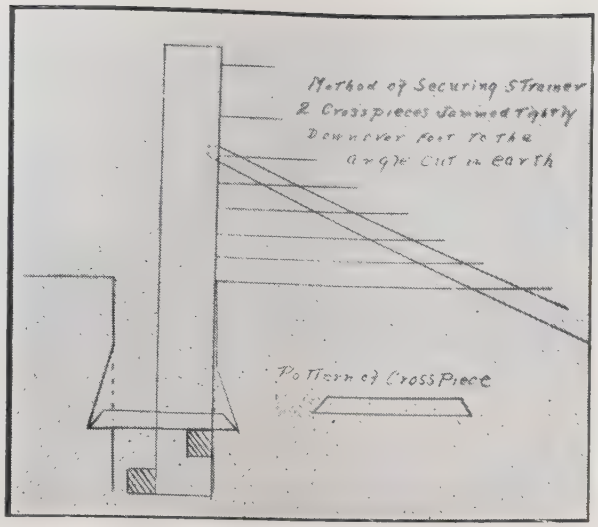
Method of Securing Strainer
2 Crosspieces Jammed Tightly
Down over foot to the
Angle Cut in earth
Pattern of Cross Piece

Fig. 2.—A method of securing strainer—two crosspieces jammed tightly down over foot to the angle cut in earth.

The next requiring attention is the strut, which should be adzed and sawn at an acute angle to fit the slot. The butt should be sunk in the ground close up to the wires and a stout piece of timber three feet six inches long should be let in at a right angle to the butt of the strut and just allowing enough clearance to drive a wedge between the crosspiece and the stay. When the wedge (Figure 3) is driven home with a maul it should drive the head of the strainer back just past its perpendicular.

"Anchor" System

There is another system which has replaced the use of the strainer and that is the "Anchor" system. This is extremely useful and quick in putting up temporary fences, and is much in favour by many users. An ordinary fencing post is used and bored to the required gauge, the wires being passed through and twisted off through the eye of the anchor six feet behind the post. The anchor itself should be constructed not less than six feet long, consisting of six or seven double strands of wire twisted tightly to a cable and leaving an eye at one end for the wires, and an open length at the other in order to insert a piece of timber strong enough to take the pressure of the strain. These anchors should be sunk three feet in the ground at the timber end and tapering up to nothing at the eye end.

Figure 4 will serve to show how the construction is done. The anchor with its block should be laid in the ground in true line with the fence five or six feet behind the post and then marked out with a spade for sinking. This can be duplicated on the other side of the post, thus making a double anchor carrying two strains of fence.

Having erected both strainers and stayed them, two wires should be run out on a spinning jenny, preferably

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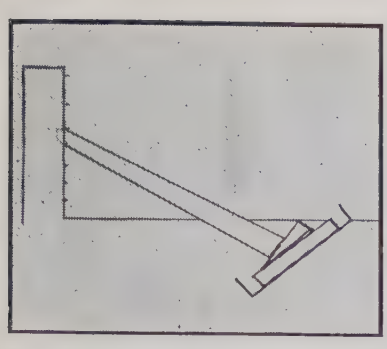

Fig. 3.—Diagram showing wedge in position ready to tighten up strut.

the top and second bottom wires. These should be temporarily strained then stretched and the slackness restrained, thus giving a correct line. All posts should be adzed to a good, even face and marked to the proper gauge, so that when the holes are dug they are easily and quickly placed in their proper position and depth. This method saves a lot of time and is well worth the trouble. It also ensures correctness and uniformity in the placing of wires in their respective places.

Fencing Rough Country

Assuming that the line is going over rough country the first post to be put in is the one on the highest ground, and when put in it is called the "point" post. The two wires should be stapled to their respective places. Further along the line on the next highest elevation, another post should be put in and the wires stapled in their places. This will give a clear defined line to put the main dips, in what place can easily be ascertained by looking along and down the duplicate wires to the desired spot. The main dips are the next to erect and the method of putting them in is exactly the same as putting in a strainer, with perhaps this difference, that with rotten and swampy ground such as one meets with in creeks the foot should be so long as is reasonably expected to hold. The holes should be trenched the same way as for a strainer and two crosspieces inserted and tightly jammed down to the bevel of the earth. If any doubts arrive as to their holding, an extra long one crossed over the two short crosspieces will ensure holding. Care must be exercised that the measurements of the crosspieces are correct and that it is a tight job, otherwise the posts will lift under strain.

Having got the main dips in, the wires should be drawn down to their places and stapled. This will give a correct direction for proceeding with the other point and dips which will be easily decided upon. These posts which are left, which are neither points nor dips but are termed running posts, should go in last and spaced according to what one requires.

When all the posts are in position the five remaining wires should be run out, stretched and strained, the barb, which should be preferably the second to top wire, being the last to be put in place. The barb should be treated the same as the others, stretched and strained, put on the point post first and then drawn down to the dip. The wires all being strained and stapled off at the strainers, the small dips and rises can be attended to by hand, the wires being lifted or depressed according to requirements. A certain number of these should be left unstapled, their subsequent putting in position making a tighter and better job.

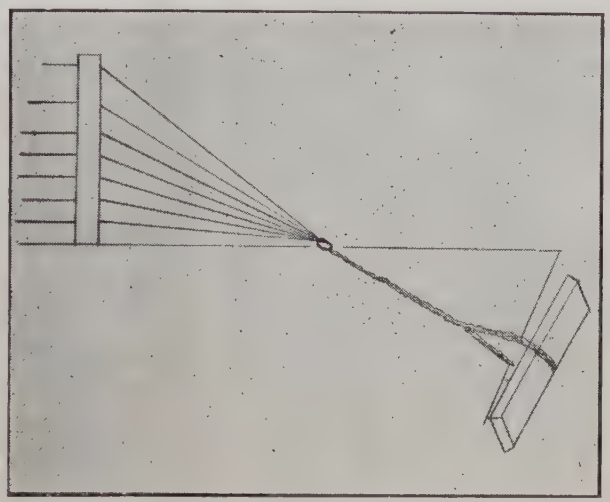

Fig. 4.—Showing method of constructing an "anchor."

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Figure 5 shows the correct and wrong way of fencing over a deep gully on rough country, and it is proportionately applicable in all instances.

Angle Posts

The next matter of importance is the construction of the angle posts. These posts have to carry the same pressure as the strainers and consequently have to be put in well to stand. There are two ways of putting them up, one being the ordinary way, i.e., to prepare it like a dip post with foot mortised in and the two usual crosspieces tightened above the foot. A trench should be dug corresponding to the required angle. Previous to putting in the corner pieces a block of timber should be jammed down between the heel of post and earth, thus tending to prevent "creeping," the post being strutted against the angle in the same way as the strainers. The foot should be not less than two feet long or the post will lift.

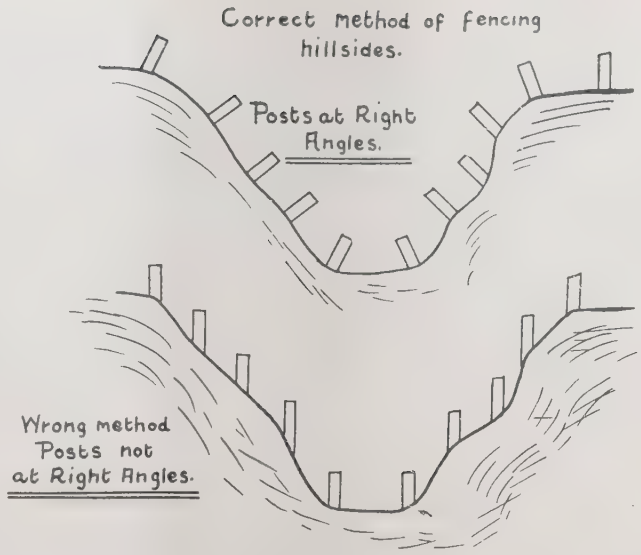

Fig. 5.—Diagram showing the correct and wrong way of fencing a deep gully.

The other way is by guying the angle post (Figure 6). Put the post in with no foot at all, ram a block of timber at the heel to prevent the "creep," then make a guy as illustrated, this being a miniature anchor. It is put down at the proper angle with the nose of the guy just protruding through the ground. The four double wires are passed through the auger hole and are then twitched tight with a strong piece of timber. This draws the head of the post over to the angle and acts for two purposes, holding the post in correct position and also acting as a dip post, it being impossible for the post to come up. This is a very good angle to erect in bad places and in deep lifts. It always remains secure and taut; even on level country it is often more preferable than the strutted angle.

The guy should be made prior to digging the trench, as then it can be marked out in its proper place. The quick and easy way to make a guy is to get two pieces of timber, the butt about three feet long and the other piece about the same, adze the second piece to a taper, then lay on the ground in the shape of a "T," staple four wires full length from heel to angle post; when one side is done turn "T" over and complete the other. There will then be eight wires to thrust through the augur hole and the guy will drop to the bottom of the trench. Fill in the trench and ram. Twitch up tight when stapled. The wires should run continuously round the heel of guy and should not be cut.

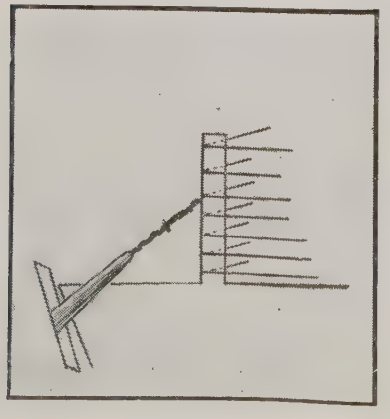

Fig. 6.—Illustration showing how to construct a "guy."

Spacing of Posts

The spacing of posts on level country is usually 16 feet 6 inches, which provides for four intermediate battens and makes a distance of approximately 3 feet 3 inches between the spaces. This makes a good boundary fence and for subdivisional work the spacing can, of course, be increased. Battens when put on the fence should be kept clear of the ground as their resting on it tends to rot them quickly. They should be cut 2 inches shorter than the gauge and when stapled on should be kept at a uniform level at the top. The staple should be just closed tightly over the wire, not driven home, and galvanised staples should not be used, as they do not last or hold—eventually the battens work loose and hang in heaps along the fence. The diamond-pointed staple is the best.

It is a general practice to keep all gateways the same width, so that any that have to be renewed can be renewed without ascertaining any particular measurement. Eleven feet is a good standard width for farm gates.

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Urgent Need For Pig-Meats

Contributed by the Livestock Division.

THE following increases in prices for baconers and porkers have been announced by the Hon. J. G. Barclay, Minister of Marketing.

BACONERS: On June 1 an increase of ½d. a lb., making the price for first quality exportable baconers on hooks at nearest port works 7¼d. a lb. dressed weight, with corresponding increases for other qualities. These prices will be paid for June, July, August and September inclusive. On October 1 there will be a drop of ¼d. a lb., making the price of first quality baconers 7d. a lb. and on November 1 all baconer prices will revert to 6½d. a lb., heads off, as in the present schedule.

PORKERS: On June 1 there will be a price rise of ½d. a lb. to 7d. a lb. for first quality porkers, heads on. On July 1 this price will be increased by a further ¼d., making the heads on price 7¼d. a lb. This price will continue for July and August, and on September 1 it will be reduced to 7d. a lb., heads on. On October 1 the price will revert to 6½d. a lb., heads off, as in the present schedule.

To ensure that prices paid to producers throughout the North Island for pigs during the winter period were in conformity with price stabilisation a full investigation has been made of prices actually received by producers last winter.

It is important to produce the maximum number of pigs, particularly baconers, during the winter months and in the following season. There is an urgent demand for pig-meats, particularly to meet the requirements of the armed forces.

Increase in Production

Pig production is probably more important today than at any other time during the past ten years, yet over the past two seasons a gradual decline in production has been taking place. The armed forces' requirements are particularly heavy, and these, together with the needs for local consumption, require a fairly substantial increase, being in the vicinity of 30 to 35 per cent. of our present production. This will not be achieved unless some conscious effort is made.

This recent anouncement made by the Hon. Minister in respect to prices of pig-meats through the winter months should encourage many pig-producers to carry pigs on to heavier weights.

The increase is required immediately, and since it takes from 9 to 12 months from the time sows are mated until carcases are available from them, it is not possible to get this year's increase by breeding more sows. Nevertheless, as the demand for pig-meats for all requirements is likely to be greater in 1944, a progressive policy should be followed. This can only be accomplished by mating the maximum number of sows **now**.

Approximately one million pigs are slaughtered every year. Last year this was reduced by 100,000 carcases, and this season's killings for the six months ended March show a further decline of 86,000 carcases, with a tendency to increase pork killings a month earlier than usual. In normal times killings increase monthly until March-April, the peak months. It is significant to note that the February kill this season is lower than that of January by 3,000 carcases. This is contrary to the usual practice. Last season, in spite of the drop in production. February killings exceeded those for January by 13,000, and March killings exceeded those of February by 17,400.

With this premature falling off in production, it is unlikely that large numbers of stores will be wintered. If this is a true forecast, it will affect the number of baconers coming forward in October-November.

Whenever an increase in production is called for, there is generally an immediate increase in the number of sows mated, but with the experience of 1941-42, and a further decline in production this season, sow numbers are probably low, due partly to the uncertainty of the winter feed position.

Seasonal Pig Feed

There is no question that there can be little effective increase in pig production unless there is first of all an increase in the amount of seasonal pig feed available.

Root crops are the most profitable means of increasing feed supplies in autumn and winter, and as crops have been seriously affected by drought conditions, grazing on pasture, to a large extent, must be used to fill the gap. This, together with the importation of barley-meal at below £10 per ton will assist the winter feed position, and make it possible to carry stores

Farmers are entitled to the assistance and advice of the District Pig Council Supervisors. Pig producers have provided the funds to enable these Councils to be set up, and all farmers are urged to take every advantage of these facilities. Applications for assistance should be made to the Department of Agriculture or to District Supervisors as follows:—Whangarei (Box 131); Pukekohe (Box 32); Whakatane (Box 12); Gisborne (Box 316); New Plymouth (Box 131); Palmerston North (Box 80); Dunedin (Box 693); Christchurch (Box 639); Hamilton, care Department of Agriculture.

through the winter to provide the needs of bacon and pork for the armed forces later in the season.

Pig-keeping would be a simple business if there was always sufficient feed on hand to supply the pigs with enough to eat. When grain is available at a reasonable price this is readily possible, but where skim-milk is the bulk supply, as in New Zealand, the difficulty of having enough milk and enough pigs is a very real one. An abundance of milk in spring and summer with insufficient pigs to use it profitably, or a shortage of feed in winter with hungry pigs are the problems that have to be faced.

In general, two main processes have been adopted on the most successful farms:—

1. Sell porkers when the milk-supply is failing; feed them on to bacon when there is plenty of milk.

2. Winter some pigs so as to have these pigs to carry on to bacon as the milk supply increases in the spring.

This is the problem the pig producer is faced with now. Many feed trials have been conducted over the past ten years, and they prove conclusively that winter feeding can be successfully and economically carried out.

Wintering Pigs

Mr. C. H. M. Sorensen, Supervisor of the Taranaki District Pig Council, has given much of his time to this work, and his finding will prove helpful to many farmers.

Pigs just weaned can be carried through the winter for three months with ½lb. of meat meal per pig daily, and with ½ ton of roots per pig at a feed cost of 45lb. of meat-meal,—about 6/-, and 2/6 for roots. On this ration pigs of 40lb. live-weight at the beginning of June will be 70lb. by September 1. If they get 1lb. of meat-meal they will be 85lb. by September, and if they get 1½lb. of meat-meal they will be 105lb. Half a gallon of milk daily in June is very desirable for these weaners, but if they are heavier by the beginning of June, perhaps 60lb. live-weight, the milk, though useful, is not really necessary.

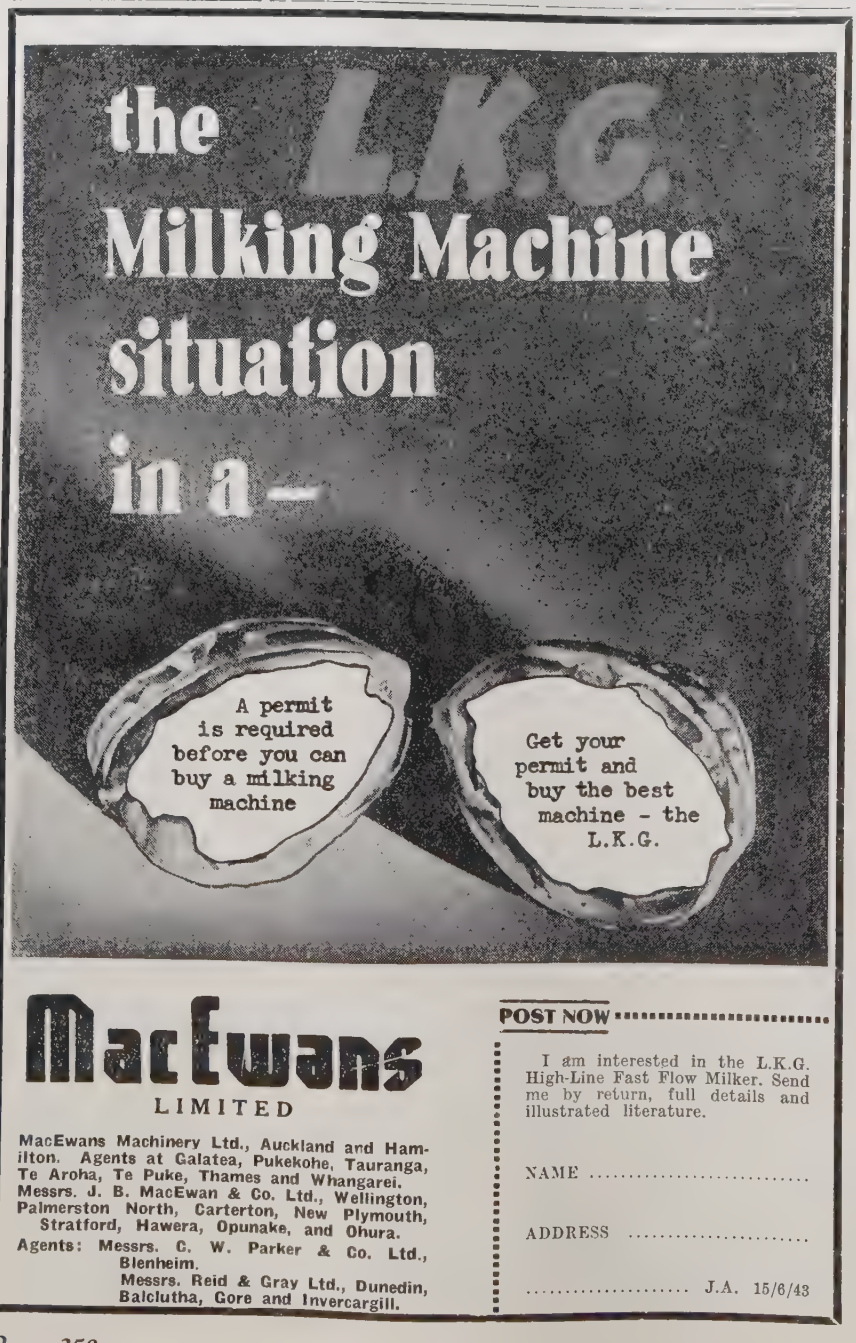
Costs, with meals at £13 a ton:

½lb. per pig per day for 90 days .. 6/-
1 lb. per pig per day for 90 days .. 12/-
1½lb. per pig per day for 90 days .. 18/-

After pigs are from 60lb. to 70lb. weight they have passed out of the baby stage, during which extra care in feeding is very desirable. By having sows farrow in February, these pigs can be 60lb. by the end of May. February farrowing makes wintering in this way decidedly easier. The more advanced the pigs are by June 1 the greater the satisfaction in wintering them.

Because meat-meal has to be purchased some are averse to using it, especially where they have their own supply of grain. When ½lb. to 1½lb. of grain is used daily with roots or grass for wintering pigs in the absence of meat-meal, the results are satisfactory, but not so good as where meat meal is used.

It will be noted that roots were costed at 5/- per ton. Where heavy crops can be grown, 60 tons to 80 tons of roots at 5/- per ton shows as much profit for an acre as most other crops do. At 60 tons to the acre, 1 acre of mixed roots should be enough to winter sixty pigs and provide supplies for sows and other contingencies. Sixty pigs consuming ½ ton of roots during the winter would absorb 30 tons, while ten sows over the same period consuming 1½ tons each would account for an additional 15 tons. This would leave 15 tons to be used in late autumn for finishing porkers or in early spring to keep the wintered pigs going till there is sufficient milk. A few carrots and pumpkins for autumn, and swedes, pumpkins, mangels or sugar-beet for the rest of the year would be ideal. Whichever gives the biggest yield per acre, that is the best crop to grow.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Importance of Quality

These wintered pigs are usually the first baconers of the season. Either because they have to be got rid of quickly to make room for oncoming pigs, or else because there are insufficient other pigs to use all the skim-milk, these baconers are fattened with undue haste with the result that they are degraded for over-fatness. On the other hand, every pig has a definite chance of being classified as No. 1 prime by taking them on more slowly, especially over the last month or six weeks. It is impossible to define just what adjustments have to be made in pig-numbers and farrowing dates to do this but it can be facilitated by having some of those roots still on hand up till November, and feeding them either to fattening pigs or to the younger ones in order to adjust the feed supply to pig numbers.

It appears that there are fundamental reasons behind this slow finishing of pigs that have had a check. The normal development of the animal is arrested by the winter-store period, with the result that when abundant feed is provided there is a tendency to deposit fat instead of lean meat. Most farmers have noticed this decided thickness of the head and neck with a tapering of the hams at the end of the winter, and this seems to disappear as they reach the final stages of fattening. The disappearance is only apparent, since such pigs have 10 to 15 per cent. more fat than the pig of the same weight that has grown normally and without a check from birth to slaughter.

The fat is not wanted by the trade, especially since abnormal fat tends to be associated with softness, fishiness, bad colour, rancidity and waste. In trials at Ruakura, pigs wintered on roots and finished with 10 gallons of buttermilk daily graded 60 per cent. of No. 2, and were ¼-inch thicker on the shoulder than similar pigs finished with 5 gallons of buttermilk daily, all of which graded No. 1 prime. Another ten finished on 6½ gallons of skim-milk were degraded for thickness over the loin. Out of the two other groups of ten, each finished with 4½ gallons of skim-milk, nineteen were graded No. 1 prime.

Summer Bacon

The other class of baconer born in June-July and finished in November-January does not receive such a severe check as the wintered pig, but nevertheless turns out an improved pig if fed as fast as possible to 70lb. live-weight and then finished off more slowly.

Much can be achieved in the way of improving both pork and bacon if the types for these two classes are selected when the pigs are 100lb. live-weight. The short, dumpy pigs make best pork, the longer ones best bacon. A pig that is less than 28 inches at 70lb. carcase-weight (100lb. alive) from the root of his tail along the back to a line behind his ears should go for pork; a pig that is more than 28 inches should be kept for bacon. They can be measured, not accurately but comparatively, with a ruler as they feed. By this means, pick out the pigs that show length, fine shoulders, and a good constitution. Turn the rest into pork, remembering always that the worse the conformation the greater the need to get the pig away in the light porker class.

Roots for Autumn Porkers

In the autumn when dairy-products begin to fail, some supplementary feed must be available to finish off many of the pigs that now go down the chute for emaciation. The question of the unfinished pig is a very serious one, and those who are interested would be well advised to see for themselves how grave it is by visiting any export-works in the autumn months. Someone has to pay for slaughtering and handling condemned pigs, and this payment must be a serious drain on the return from sound pigs.

In the economics of pig-keeping it is just as essential to provide a winter feed supply for the pigs as for cows. Cows consume in winter the surplus summer growth of the main crop grass. Because the surplus summer feed for pigs—dairy by-products—cannot be preserved, preparation for winter feed must be made in the preceding year. Now is not too early to plan for next winter.

Importance of Pig Meats in Wartime

"I WISH to make an appeal to pig producers to increase their production, especially of baconer pigs. The present supply position," stated the Hon. J. G. Barclay, Minister of Agriculture, "reveals the fact that the quantities of porkers and baconers available are substantially below the figure necessary to meet the present needs of the local market, and to fulfil completely our armed forces' contracts for supply in the Pacific area.

The unfavourable autumn experienced in many parts of the Dominion has led to a limitation of winter feed supplies. In spite of this difficulty, however, I am certain that, as pig production is so intimately related to our war effort, the industry will again make every possible endeavour to meet requirements.

Arrangements have been made to import stock foods at prices substantially lower than those operating last year. At the present time stock meal imported by the Wheat Committee is available at Auckland at £10/14/- per ton ex wharf to buyers of ton lots or more. Furthermore, arrangements have been made for the importation of an additional 5,000 tons of this feed spread over the next few months so that there will be ample quantities available to producers throughout the winter period. I have also arranged for the Internal Marketing Division to supply as early as possible in June 1,500 tons of barley meal, which will be available at North Island ports at £9/15/- per ton ex wharf.

The National Pig Industry Council, and District Pig Councils, which in the past have played a very important part in the stimulation of pig production, are urged to renew their efforts by particularly encouraging producers to carry their porkers to the baconer stage, thereby increasing the total weight of pig meats in the near future.

Every effort must be made to maintain supplies to the Allied Forces dependent on this Dominion," continued the Minister, "and to assist our effort, a prohibition on the sale of fresh, frozen and cooked pork for the initial period of two months, commencing May 20, has been instituted.

Compared with the degree of rationing of pig meats in other countries, I am certain it will be readily accepted by the public, particularly so because the measure of their sacrifice is the extent to which our contracts for supply to the men actually fighting this war can be fulfilled."

Modern Piggeries.

Better housing, sanitation, and facilities for looking after pigs are among the first improvements that are made with profit on most farms where pigs are kept. Plans and specifications of houses and layouts actually in use in New Zealand are available in the Department's **free** bulletin, "Layout and Construction of Modern Piggeries." Copies may be obtained from the Department of Agriculture, Auckland, Wellington, Christchurch or Dunedin.

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Hail Damage In Linen Flax

HAIL damage in linen flax has been very evident in the more southerly districts of the South Island during the past two years, and its effect has been such that it appears to rank as one of the most serious local problems associated with the crop. Whether the past two seasons have been particularly inclement in regard to out-of-season hailstorms in these districts, or whether such hailstorms are a feature of the climate, but hitherto have not been so much noticed, the fact is that the danger is always likely to be present, and at a certain critical stage of growth of linen flax irreparable and widespread damage can be caused by even a short visitation of hail.

— By —
K. COTTIER,
Assistant Instructor in Agriculture, Invercargill.

Result of Hail

1. **A crop may be rendered completely useless for fibre production.**
2. **A crop may be reduced in value, seriously or slightly, according to the extent of the damage.**

Nature of Damage

The young linen flax plant develops height by the continuing elongation of the top portion of the stem where the growing-point is to be found and as the top portion is the more recently formed part of the stem, this growth is much more tender than the older growth further down the stem which has become hard and strong in comparison. Observant farmers will know that the growing crop is characterised by plants, the tops of which are so tender and lacking in rigidity that they droop over for the topmost two or three inches. This condition is illustrated in Figure 1.

In fairly early sown crops in Southland this stage may be reached in December. The effect of a hail storm of some severity during this period can well be envisaged with hailstones of perhaps one-quarter of an inch in diameter striking the tender plant with some force.

The most obvious form of damage is that the top part of the stem which includes the growing-point is completely severed. The effect is the same as pruning or topping a tree. The plant forms new growing-points—not merely one but perhaps several—below the point of severance, and the result is the development of lateral branches arising along the old main-stem. The plant thus overcomes the set-back of topping and proceeds to maturity, and may ultimately have three or more well-developed seed-bearing branches originating below the old point of severance. This is illustrated in Figure II.

This condition means that the effective fibre-length, which is measured from near ground-level to the point where branching first commences, is reduced in practically all such cases much below the minimum length required for line-fibre production. A secondary effect lies in increased seed-production due to a larger number of seed-bearing branches.

The above form of damage is easy to detect, and farmers can readily understand the rejection or devaluation of crops so affected. In other cases, however, there may be no such severance of the main stem, but damage no less serious may be present due to hail bruising. This type of damage has been aptly described as insidious damage, for it is more difficult to detect, and its presence cannot always be observed immediately after a hailstorm. The bruising causes injury to the stem which the plant eventually repairs by forming a callus. The bruise may be small, in which case the resulting scar is practically invisible; or, where it is larger, a definite swelling is caused by the formation of the callus. In some instances where severe bruising has occurred the swell-

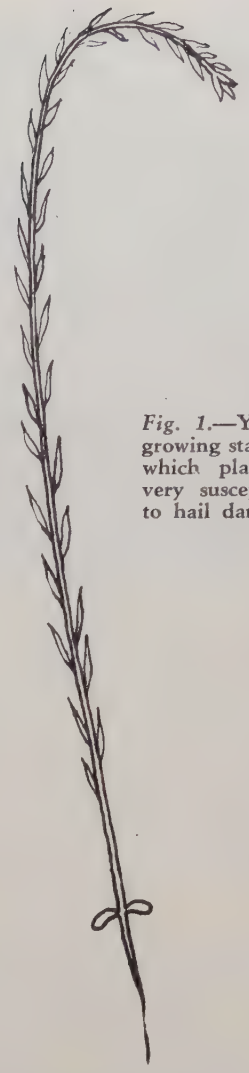

Fig. 1.—Young growing stage at which plant is very susceptible to hail damage.

BUSH SICKNESS SUCCESSFULLY OVERCOME

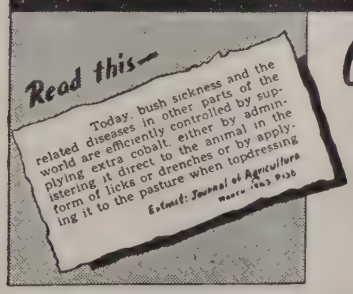
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Fig. 2.—Original stem severed by hail, causing development of several lateral branches.

ing completely surrounds the stem and is known as a "node." In all cases where a scar, incomplete node, or complete node has been formed, there is a break in the fibre-length at the point of formation of the callus. These conditions are illustrated in Figures III., IV. and V.

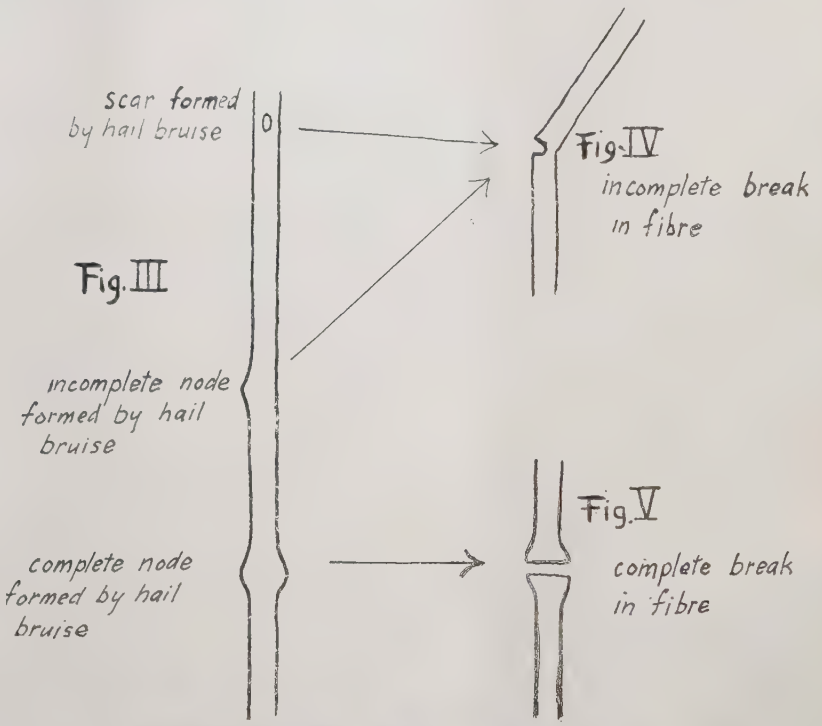
Economic Effect

Hail damage may thus exist in any or all of the above forms. It may also be present to a major or minor extent. Clearly, then, the nature and extent of the damage will vary with different crops, which may be slightly affected, seriously affected, or affected to a degree where the crop is useless for fibre purposes.

The shortening to below minimum of the effective fibre length through severance of the main stem and its consequential lateral branching would place a crop in the category of "rejected—suitable only for seed production" if a large proportion of the crop were affected. Moreover, it is probable that in such a crop hail-bruising damage is also present.

In the case of an individual plant the stem of which, although it has not been severed, has hail damage in the form of scars and nodes down its entire length, such a plant would be valueless for line fibre production because the fibre would be broken up into short pieces which would be lost during processing. Obviously a crop containing much damage like this would have to be rejected and cut for seed.

A crop, however, may not be damaged to the extent mentioned above, and although still severely damaged may yield line fibre, but there will be such a high loss during processing owing to breakage that in field valuation only the basic rate could be paid, and premium rates such as for quality would be eliminated altogether. Lastly, where an otherwise good crop contains damage of a slight nature, one could reasonably expect good line fibre from it, but a certain percentage of loss during processing would also be expected, and accordingly the field valuation would have to be adjusted.



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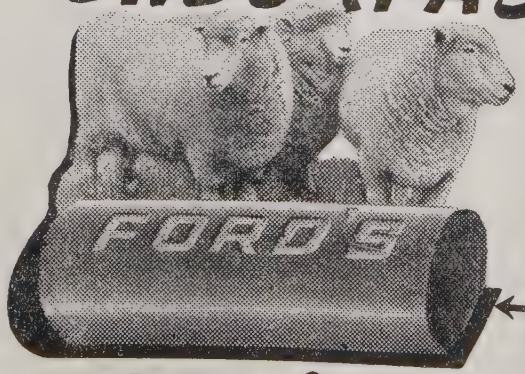

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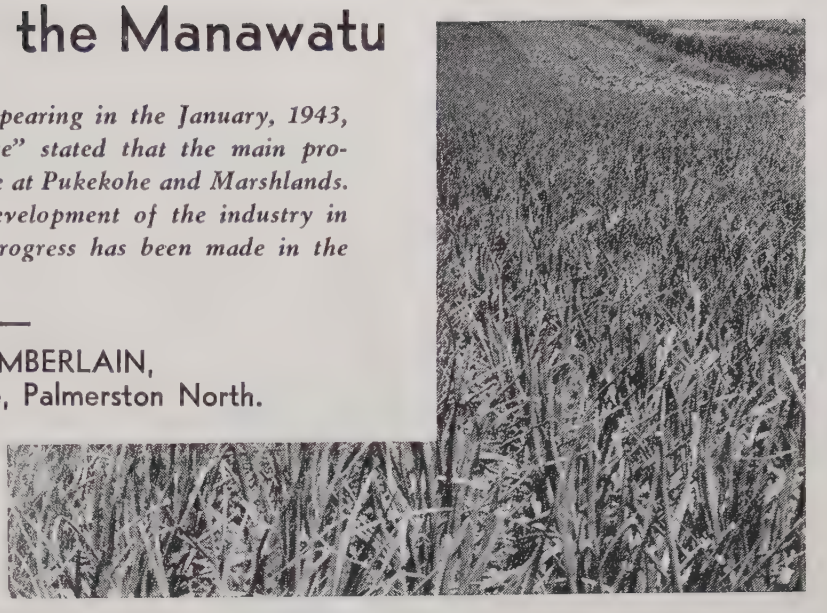
Onion Growing in the Manawatu



An article on "Onion Growing" appearing in the January, 1943, issue of the "Journal of Agriculture" stated that the main producing districts in the Dominion were at Pukekohe and Marshlands. The following article details the development of the industry in the Manawatu, where very rapid progress has been made in the last few years.

— By —
H. de O. CHAMBERLAIN,
Instructor in Agriculture, Palmerston North.

OPIKI is situated in the Southern Manawatu and the soil devoted to onions has been reclaimed from peat swamp with a fair admixture of silt from earlier floods.

At present Pukekohe takes premier place as an onion growing district with a production of about 5000 tons, and Marshlands second with approximately 4500 tons. It can be stated that the growth of the Manawatu production during the past few years has reached 3000 tons and all indications show that this figure will soon be considerably increased.

Opiki Areas

Individual areas vary from 60 acres down to a modest one acre with several about the 20 acre mark, while yields of 16 to 18 tons per acre are not infrequent.

Most of the areas now growing first-class onions were taken over in a rough state, full of stumps, undrained, and with a good clothing of formidable rushes. The rushes were chipped, often with a shovel, and burned, the surface stumps removed by tractor or blown out with gelignite, and the land ploughed 12 in. deep in June or July with a swamp plough. Open drains about 3 ft. 6 in. deep were carved along every finish to reduce the water table. Heavy discs reduced the plough furrow to a workable condition, and rolling and harrowing completed pre-cultivation.

Sowing

In the Opiki district seed is sown in August, either with hand seeders or three or four row power-seeders according to the size of the farm, and at the rate of 5 lb. to the acre. The rows are thinned out, no transplanting being done.

Until recently seed was sown on the flat, accompanied by up to 18 cwt. per acre of manure—either superphosphate or mixtures of super, and blood and bone manure. Lately many of the larger growers are sowing their manure with ridgers on a shallow ridge, and sowing the seed one inch deep on the top of the ridges. This has the effect of concentrating all the manure below the plants, where it is most needed, raising the seed above excess water if the weather happens to be very wet, and rendering the weed growth between the rows easier to control. When the plants are well above the ground the ridges are removed except just around the plants.

Cultivation

Cultivation the first time is usually done by hand, and the rows are hand-weeded about three times. Usually 5 or 6 inter-row cultivations are given before Christmas to keep the soil open and free from weeds. On the large areas this is done mechanically, implements being used with spring-release tines to prevent continual damage from striking submerged stumps.

Where onions grow, potatoes also flourish, and the standard practice is to alternate the potatoes and onions year by year. Rows of onions are set 10 in. to a foot apart, with a row missed regularly throughout the area to allow the tractor and spray pump to get through the crop without injuring it. The number of sprays put on varies with the season, but an average of one Bordeaux spray, 3-4-40 as a base, followed by three lime sulphur sprays, 1 in 500, is usual to combat mildew; and nicotine sulphate 1 in 200 is added to take care of insect invasion.

Harvesting

The crops are lifted as soon as the tops commence to die and the rows are pulled six in one, the onions being laid on their side on clean soil until the tops and roots are quite dry. Now is the time for good grading and trimming, the tops being removed with sharp shears and the grading being done at the same time.

Harvesting is done only on fine days, enough being trimmed and graded in the morning to keep the men busy bagging during the afternoon. Usually 40 to 50 tons in a day.

Opiki produces onions of the finest quality, and Manawatu growers and merchants are looking forward to the day when the district will lead the Dominion as a producer of main-crop onions.

Garden Crop Manures

GARDEN crops require a different manuring programme from farm crops. The uses of the various classes of manures in the home garden are fully explained in bulletin No. 105. Soil requirements of phosphates, nitrogen, potash, lime, organic manures and humus are dealt with, including a discussion on the various manures in which these are available. There is also a summary of the fertiliser requirements of the various classes of garden crops, and the amounts of fertiliser to use. Write to the Department of Agriculture at Auckland, Wellington, Christchurch and Dunedin for a **free** copy of this bulletin.

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New Zealand's prosperity whether in peace or war is inseparably linked with her pastoral industries; grass is, and is likely to remain, this Dominion's front line crop. Inmprovement, therefore, in the country's grasslands is the forerunner to increased carrying capacity, higher production, and closer settlement.

Improving Nelson Pastures

— By —

D. M. E. MERRY,
Instructor in Agriculture,
Nelson.

AS a province Nelson is not ideally suited to a purely pastoral economy—much of the hinterland is mountainous, much when cleared has proved to be of low fertility, of which the Moutere Hills is typical, while in the higher rainfall Collingwood county nature has disposed a considerable acreage of practically worthless pakahi.

Geographically and climatically the province falls into three rather well defined areas. These are Murchison county, Waimea county and the Takaka and Collingwood counties.

Three Defined Areas

The Murchison county lies inland in mountainous country on the main Nelson-Westport route. This district has a well spread rainfall and though the valley flats are nowhere extensive they are in general well suited to dairying.

Nelson's greatest wealth is won from Waimea county; here also are the largest centres of population—Nelson city and Motueka. Except for its coastal flank Waimea county is sheltered by encircling mountains. Probably no other district in New Zealand can lay claim to such a diversified production as this. Fruit, tobacco and hops are grown for export, truck crops for canning and neighbouring metropolitan markets, while the principal area of flat land, the Waimea plain, is directed primarily to an arable system.

Fig. 1.—Moutere foothills (in foreground) showing reversion to gorse and secondary growth. The Waimea Plain lies to the left of the centrally disposed clump of trees.

Of the hilly country over 300 square miles are of heavy low-fertility clay, much of which has reverted from sown pasture to scrub, fern and gorse. On the lower foothills cropping was attempted in the earlier years of settlement, but yields were so poor that this method of farming has now been abandoned. The carrying capacity of this land in its present state is roughly one sheep to 3-4 acres. Results have shown, however, that the more suitable country can be successfully grassed. Nevertheless, the liability of Waimea county to summer drought and its considerable extent of poor land seriously militates against high pastoral productiveness. Further, much of the farming in the county is very mixed with arable or cash crops playing a considerable part in the farm income.

The Collingwood and Takaka counties are disposed toward the West

Left: Fig. 2.—Hill country of the Moutere type successfully grassed. A pasture on Mr. G. A. Palmer's property, Lower Moutere. *Right: Fig. 3.*—A close-up of Fig. 2. This was sown with the permanent ley recommended. Note the excellent sward of ryegrass, cocksfoot, white and red clovers.

Coast and are separated from Nelson by a sizeable mountain range (2600 ft. over roadway), and have a much higher rainfall than has the Waimea. Indeed, in the Bainham district the rainfall approaches 150 in. annually. These districts are predominantly pastoral, though the dairying land is mainly coastal, with cattle and sheep grazing the hills. Centred about Onekaka and extending deep into the Collingwood district is a considerable expanse of pakahi country. Attempts have been made at the grassing of certain areas of this, but in general it is yet undeveloped and will probably remain so.

Four Main Facts

With this synopsis of the province and its basic agriculture one might reasonably ask, "How can Nelson's grasslands be improved?" The answer is not simple. Climatic conditions, the system of present farming, and the considerable soil variations all influence any swing to grassland improvement. There are, however, certain cardinal facts proved beyond all doubt which are stepping stones toward higher pastoral productivity

Firstly, the liming and topdressing of run-out grassland in an endeavour at restoration must be considered as wholly uneconomic. Resowing to proved strains of grasses and clovers

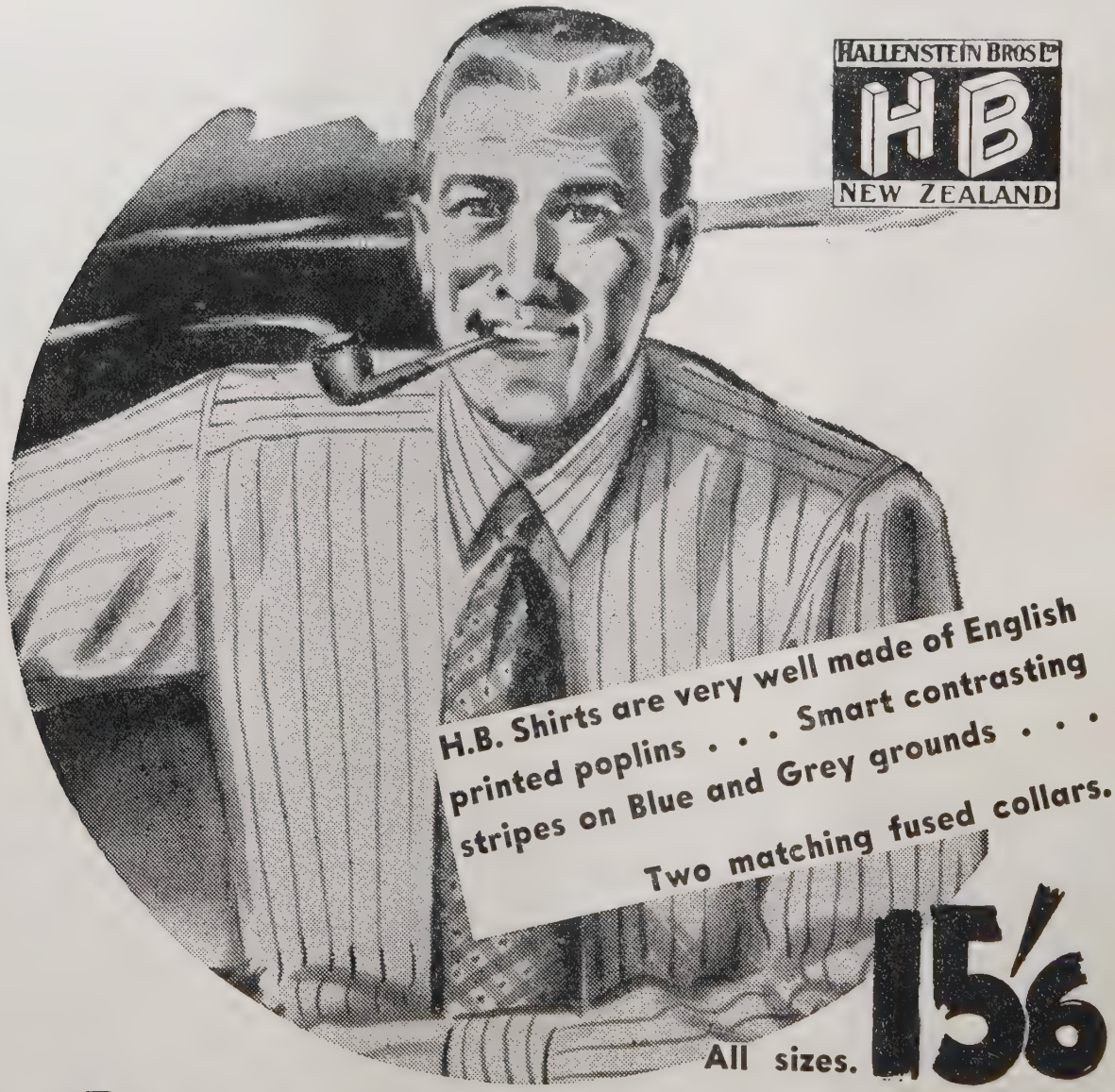
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Fig. 4.—The difference between certified and uncertified sowings—success and failure! A view of a trial plot on Mr. C. A. Newport's property, Braeburn. *Left:* Certified mixture. *Right:* Uncertified.

is the only remedy, and this entails the purchase of Government certified ryegrass, cocksfoot, white and red clovers. There are few farmers today who do not appreciate the value of well-bred stock. Why then run selected stock on grassland of mongrel strain? Protection lies in Government sealed and tagged seeds which every merchant can supply. The duty is yours to see that you receive what you ask and pay for.

Secondly, it is not unreasonable to state that land must be prepared in ample time for early sowing. Best results follow sowings made in late February—and this is where so many farmers fail. Late sowings inevitably imperil clover establishment and increase the risk of frost lift. When clover fails the whole pasture is jeopardised. Clover is the backbone of all grassland, and 2 to 3 lb. of certified white clover should be included in every sowing, even though inferior strains may come in later in spite of liming and topdressing.

Thirdly, it is wise to bear in mind that cover crops can often be inimical to good grass establishment. In fable we learn that "Too many cooks spoil the broth." This has an application also to the sowing of grassland. Where quick growing annuals are seeded down with slower establishing perennials, the competition may be such that the establishment of a dense sward of the best grasses is permanently impaired.

In Nelson best results definitely follow straight sowings—and as a word of warning, heavy inclusion of ryegrass, i.e., 3 to 6 lb. per acre, can have a similar smothering action to a cover of oats, swedes or rape. Montgomeryshire red clover at 2 to 3 lb. per acre should always replace cowgrass in a permanent mixture.

Fourthly, 40 to 45 lb. seed per acre is required to give a satisfactory ground cover and a dense sward. With less seed, pastures are likely to be either weedy or tufty. The practice of economy in seed is penny wise and pound foolish.

Proved Sowings

Temporary Pastures: For a straight-out temporary pasture down for 2 to 3 years and intended both for haying and grazing, Italian ryegrass (certified) at 20 lb. per acre (one bushel), plus 6 lb. of broad red clover (cowgrass) is probably unexcelled. Many such crops are mown for hay in the early season and later cut for seed.

Permanent Leys: The most generally suitable mixture for district sowing is:

	Lb. per acre
Perennial ryegrass	25
Cocksfoot	12
White clover	3
Montgomeryshire red clover	2 to 3

All above Government certified.

On land subject to dry summer conditions this mixture is unrivalled because of the deep rooting habits of the cocksfoot and Montgomeryshire clover. Many farmers disdain cocksfoot because of its reputed poor ability to stand close grazing and its proneness to tuft. District experience with cocksfoot of certified origin sown in suitable quantity has shown it to be persistent, and one of the most valuable components of any seed mixture.

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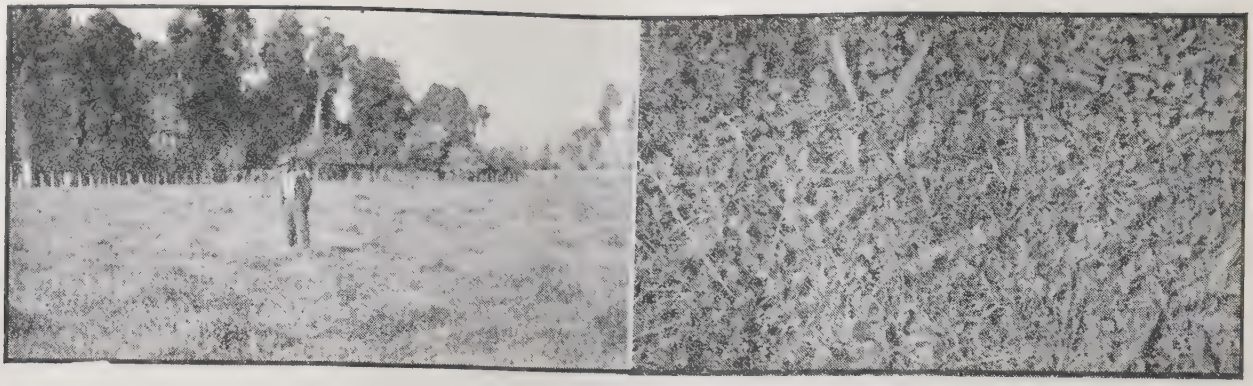

Left: Fig. 5.—A paddock of prairie grass on Mr. W. G. Gibb's property, Takaka, after recent grazing. *Right: Fig. 6.*—Close-up of a deteriorated pasture on shingly river terrace successfully sown with subterranean clover.

Mixtures for Heavier Rainfall Districts: In the higher rainfall areas, notably in the Collingwood district, there are indications that ryegrass, crested dogstail and timothy are more suitable species than cocksfoot. Accordingly, less cocksfoot should be sown except on very free draining soils. The following mixture will be found generally suitable there:—

	Lb. per acre
*Perennial ryegrass	30
*Cocksfoot	6
Timothy	4
Crested dogstail	2 to 3
White clover	3

* Government certified.

Similarly, in the Murchison district it is often desirable to reduce or delete cocksfoot where the land lies wet. Lotus major should be included in such situations.

Special Purpose Pastures. Figure 5 illustrates a 4-acre paddock on Mr. W. G. Gibb's property, Takaka, seeded down five years ago with 40 lb. per acre of prairie grass (*Bromus unioloides*). This is closed yearly for early spring grazing by the dairy herd, for which purpose it has been most valuable.

Prairie grass is most useful in providing early feed, for which purpose it should be winter spelled and never closely grazed. A recommended sowing for such an area would be 40 to 60 lb. prairie grass and 2 to 3 lb. white clover per acre on high fertility soils. This species can also be included in short-term mixtures intended primarily for haying and in this role prairie grass has been successful on other dairy farms in Nelson, notably in the Rockville and Wakapuaka districts.

Other Clovers: On coastal properties liable to occasional tidal inundation 1 lb. per acre of strawberry clover is invaluable. This clover does well under conditions of slight salinity.

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Subterranean clover sown at the rate of 1 to 3 lb. per acre has been most successful in sowings in the Richmond foothill area, on light sandy soils, and on shingly, stony land throughout the district.

Sowing

Should grass seed be drilled or broadcast? As already indicated the sowing of a cover crop with a permanent seeds mixture is unwise—the same applies to drilling pastures. Generally a broadcast sowing gives a better ground cover with a dense tight sward and fewer weeds. On poor country drilled sowings never sward down satisfactorily, often remaining in their drilled pattern. Rolling, following chain or brush harrowing after sowing is a very desirable practice. Again, lime and superphosphate are best applied immediately following sowing. It is not expedient to cultivate in lime or fertilisers—they should be near the surface where they will be of greatest use.

Surface Renovation

Following a number of trials in which attempts were made in various parts of this district to establish subterranean clover, surface sown, in imgrass, cocksfoot and other suitable grasses on harrowed, though otherwise unworked and deteriorated pastures, the opinion was formed that the results were not commensurate with the expense involved. The reasons for failure appear to lie in the slowness of introduced clovers and grasses to gain foothold, browntop aggressiveness, and the climatic drawback consequent on dry summers and insufficient rain before the advance of winter. However, quite apart from these results several very successful attempts by farmers to establish subterranean clover have been seen, especially on stony, sandy or shingly soils. Burning off of existing browntop, or close grazing before attempting such surface sowings is considered helpful. A notable example of the success of subterranean clover surface sown, in improving shingly river terrace land is that on Mr. D. G. Win's property on the banks of the Buller River, Murchison. Where, however, ploughing is practicable this offers the best and most speedy method of grassland improvement.

Manurial Treatment

Good pastures, like good stock, respond to adequate attention. A dressing of 5 cwt. per acre of lime every year, or second year, will pay handsome dividends. This treatment will also ensure the greatest effectiveness of the superphosphate ration, especially if the better pastures are carefully nurtured. Superphosphate is best applied in early autumn, not midwinter as is only too common. Unfortunately basic slag is now unprocurable. In this district basic slag under trial has proved definitely superior to superphosphate on soils of the Moutere Hills class, and a similar result has been obtained on the property of Mr. E. M. Brown, Murchison. It has proved at least equal to superphosphate on trials on Mr. G. D. Dixon's property, Wakapuaka, and on Mr. J. Wigzell's property, Rockville. On these latter properties, soils of the Moutere class, and a trial on Mr. K. Baird's property, Motupipi, Takaka, potash in the form of 30 per cent. salts, applied with a phosphatic fertiliser, has given a definite and strong response.

Summary

Nelson can improve her pastures immeasurably if run-out grassland is resown with grasses and clovers of certified origin in suitable mixtures. Earlier sowings should be made the rule and the unsound practice of cover cropping and neglecting to sow white clover abandoned. Lastly, lime, which is the province's heritage, should be liberally applied at sowing down together with available phosphate.

Grassland is a national asset—its improvement is of national importance at all times.

Internal Parasites in Sheep and Calves

A **free** copy of bulletin No. 171, which fully covers the question of the recognition and treatment of the internal parasites in sheep and calves is available from the Department of Agriculture at Auckland, Wellington, Christchurch or Dunedin.

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Veterinary Notes for the Farmer

Winter Feeding of Stock

ALTHOUGH in many instances a certain amount of supplementary feeding is carried out during the winter months, it is very evident that the quality and quantity given is far below that required. Were the far-reaching effects of insufficient and unbalanced feeding realised, there is no doubt that more attention would be paid to this important side of farming operations.

Farmers are often rather much inclined to gamble on Nature supplying sufficient pasture growth for their stock in winter, instead of providing against drought and severe winters by the growing of supplementary feed. It is the purpose of this article to point out some of the effects on stocks of underfeeding, especially during the winter months.

Feeding and Disease

Firstly, it is intended to consider feeding in its relation to disease. Vitality is an all-important factor where the prevention of disease is concerned. For instance, it can easily be realised that an animal underfed and exposed to the wet and cold of winter is not in a condition to put up a successful fight against the onslaught of disease. Because of insufficient feed the animal is forced to draw upon its reserves of vitality to sustain life. In addition, in the case of a dairy cow especially, there is often a calf to nourish. Again, food is required to maintain body heat; therefore, the colder the weather the more the food required.

Another important factor to be remembered in the case of a dairy cow is that after her lactation period is over she needs the best care and attention in order to build her up for the coming season and to give her a chance to nourish properly the calf she may be carrying. Unfortunately, how often is it otherwise? The cow is turned out when the season is over, and is given a little mouldy hay and often nothing at all but what she can pick from the bare paddocks. It is no wonder that our losses from disease are heavy.

Animal's Reserves

When a plentiful supply of nourishing food is available the animal's reserves remain untouched, its body heat is maintained, it is well able to stand the wet and cold of winter, and, above all, is in a condition to have an excellent chance of withstanding the attack of disease.

It is not the intention of this article to discuss diseases, but research has shown that proper feeding, especially during the winter months, undoubtedly helps to prevent such troubles as milk fever, paralysis, and grass staggers. It is also considered that some kinds of sterility and non-contagious abortion may be caused by improper feeding. However, in all diseases the resistance of the subject of the attack is the governing factor as to whether it lives or dies, and it goes without saying that a well-fed animal has a better resistance than an underfed one.

The writer has taken particular notice of farms in the Wairoa district, and has found that on those where efficient winter feeding is practised the loss from disease is very low, but on those where poor feeding is done or where no feeding is done at all, loss from disease is much higher.

Butterfat Production

The butterfat average of the farms of the Dominion is about 240 lb. When it is considered that a cow producing under this average of butterfat in the season is regarded as an unprofitable proposition, it would appear that a large number of dairy herds are hardly paying their way. The main reason for this is not hard to find, and can be summed up with the word "Management," of which proper feeding plays the major part.

How can an animal, which has been subjected to semi-starvation and even starvation conditions during the winter months be expected to produce heavily during her lactation period? At least the first two or three months of that time are required to build up her lost condition, with the result that the "flush" is past before she is in a condition to milk well. A cow should come in to start the season in the best possible condition, so that she reaches her peak production as early as possible.

A little inquiry into the methods followed by those farmers who obtain high butterfat averages year after year will show that most of their success is due to the attention paid to their feeding programme. Rigid culling and good bulls play their part, but the highest

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butterfat backed bull in the world would be of little assistance on a farm where proper feeding was neglected.

Examples on Farms

The writer has again taken notice of farms in the Wairoa district with high and low butterfat averages, and has found the above-mentioned observations to be amply borne out.

For instance, there is the case of Mr. T. H. Hall, of Matai, Wairoa, who for three seasons running topped the Wairoa district butterfat averages before going out of dairying. When Mr. Hall first started dairying his average was quite low, only a little supplementary feeding being done at this stage. He decided that more attention to his feeding methods would increase his milk production and, accordingly, his butterfat average.

The first year proved this contention, for his average rose to 309 lb. He further improved his feeding methods, and the following season his average rose to 425 lb., the highest in the district. The number of cows kept was not increased in any way. Mr. Hall also asserts that his loss from disease was reduced to practically nothing by his improved feeding methods. Another farmer of this district, Mr. A. R. Young, of Paeroa, Wairoa, who topped the butterfat average for the district in 1939, also pays strict attention to feeding methods, resulting in yearly high averages and practical immunity from loss through disease.

Proper Feeding Pays

It can be seen, therefore, that it pays to feed sufficiently and correctly, and it is safe to say that on the majority of farms where low butterfat averages are experienced, production could be substantially increased were better feeding methods instituted.

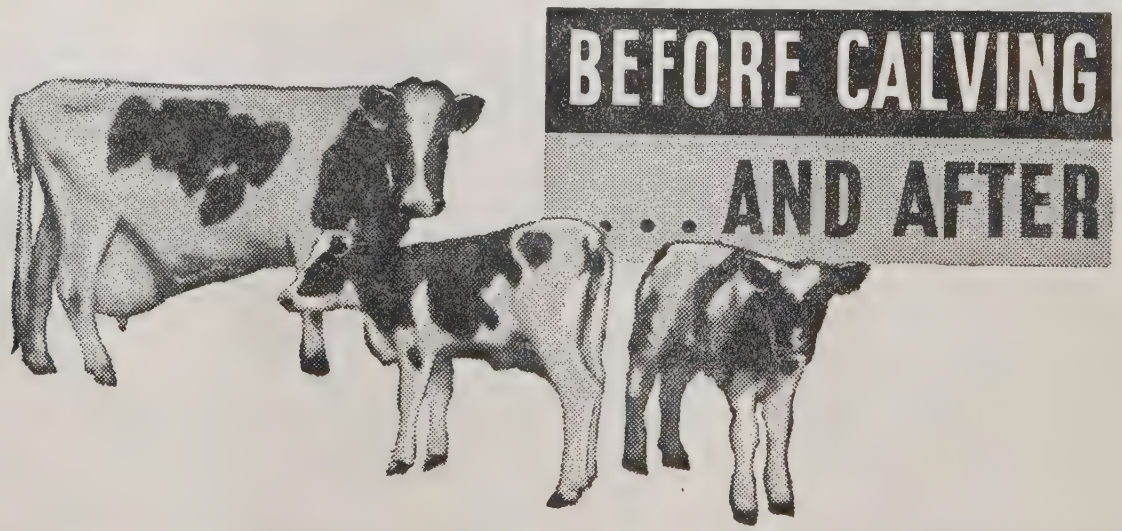
It should be stated here that it is essential that hay and ensilage should be of the best possible quality; mouldy hay and ensilage which has not been properly made can be harmful to stock, even to the extent of causing considerable loss. To obtain the best results and have cows coming in in really good order, crops such as carrots, pumpkins, and swedes should be grown, which, with good hay, are excellent feed.

Care of Young Stock

Considerable loss is caused to the farming industry by the neglect of proper feeding methods for young stock. The first year of an animal's life is the most important, and the treatment it receives during that period determines its future value to the farmer. Especially is this so in the case of calves intended for future dairy herds.

Unfortunately, this factor is all too often neglected and the result is a weakly animal and an easy prey to parasites, or, if it survives these, a stunted beast of little use from a butterfat production point of view and less so as a potential breeder of healthy, vigorous stock for future herds. It is also an animal that will more easily succumb should disease germs attack it.

It is most important that the calf gets its mother's milk for the first four or five days and whole-milk for at least a fortnight. The change to skim-milk should be gradual, and the loss of feed value caused by the skimming should be replaced by a supplementary



Two Common-sense Precautions every Farmer should take . . . .

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feed, such as linseed meal or meat-meal. The latter should be increased in proportion to the increase of skim-milk. A little good-quality hay for the calves to pick at is also very beneficial.

Again, it is most important that the calves should be weaned on to good clean pasture to avoid as much as possible the risk of parasitic infection.

Conclusion

The lack of sufficient winter feed was drastically demonstrated in this district in 1939. On many farms large numbers of cattle died through absolute starvation. Many died from paralysis and other troubles which, for the greater part, could be traced to the poor feeding methods followed. A very large number also were in such poor condition that they were certainly not able to produce much during the season.

It would appear that advantage should be taken of good seasons to get in extra supplies of hay. In this district during 1939 this commodity was almost unprocurable and was at a price that would make the purchase of any large quantity beyond the means of many farmers.

—G. F. HUDSON, Inspector of Stock, Wairoa.

Answers to Correspondents

Bottle-Jaw in Sheep

"N.C." (WELLSFORD):—

Could you please advise me regarding the following ailment affecting sheep, usually in grown sheep and mostly in ewes. There is a swelling of the throat below the back of the jaws. Sheep lose condition fairly rapidly and develop a very dopey condition. In some cases a recovery is made, but often fatal results follow. I have heard that worms are the cause. Would this be the throat worm?

LIVESTOCK DIVISION:—

The condition in sheep described by you is commonly known as bottle-jaw, the swelling arising from a dropsical condition in the space between the lower jawbones. Dropsy in this part may be commonly seen in sheep seriously affected with parasites in the stomach and intestines, in fluke-infested sheep, or in sheep which have

Advisory Service on Veterinary Matters.

Farmers are invited to submit inquiries connected with the health of their stock, and the replies will be published under this heading.

advanced liver disease after grazing on ragwort-infested country.

Dropsy, as it occurs in these cases, may be due to anaemia of the blood following parasitic attack by worms or flukes, or may be due to defective heart action in the case of liver disease.

The history of your losses would indicate that a few animals, probably of weaker constitution than the others, are infested with worms in the stomach and intestines. Such animals might be dosed in the early stages as soon as they are noticed to be dopey. Dosing may be repeated again in about three or four weeks.

Vaccination Against Black Disease

C.H. (NAPIER):—

Please advise the correct method of injecting sheep for Black disease.

Is it better to use a long needle on the hypodermic syringe so as to place the toxiculture as far back as possible or would it be just as effective to prick the skin and inject?

I notice a small number of ewes that were inoculated last year have a hard growth under the skin from the previous injection. Is this an indication of a good or bad inoculation?

These sheep have been inoculated inside the front leg beside a brisket. By using a needle 1¼ inches in length and inserting this its full length just

Coccidiosis

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under the skin before injecting the toxiculture, there should be less likelihood of leakage than in the case of an injection that had a very short channel. The dosage is 2 c.c.

LIVESTOCK DIVISION:—

The persistent small hard lump at the site of inoculation is the regular result from the use of an alum precipitated vaccine, and could no doubt be taken to indicate that the vaccine had been properly placed. A needle such as you use about 1¼ inches long should be suitable. It is important to raise the skin by pinching up with the free hand, before inserting the needle, and then to run the needle in as nearly parallel to the skin surface as possible so that it does not enter the deeper structures, but lies between them and the skin. I do not think there would be much advantage in using a shorter needle, as there is some slight chance of the vaccine leaking back, also there would be more tendency to put it in at right angles to the skin.

Instances of small cheesy abscesses on the side of the withers due to vaccination have been seen in sheep at freezing works, so that it is better to choose the site on inner surface of the foreleg, against the brisket, or on the brisket; also the skin is thinner at this point.

It is advisable to swab the area with methylated spirits or a weak solution of some antiseptic before injection.

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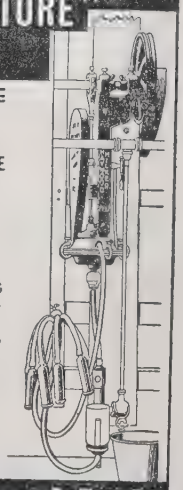

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J.A. 15/6/43

"Chronic" Greasy Heels

"J.O.M." (POKAKA):—

I have an aged three-quarter draught mare that is apparently suffering from some skin disease on the legs. I have clipped the hair of her legs and the back of her hind legs, and from the hoof up is a series of ridges and smallish lumps due to a thickening of the skin. About the fetlock joint is very swollen, and owing to the skin between the joint and hoof being in ridges she has a very stiff action.

Occasionally one of the lumps or ridges will exude a small quantity of a watery blood-like substance, which is practically odourless, through the skin. There is an odd lump or two starting on the front legs about the fetlock joint.

Although the mare has a habit of rubbing herself against posts and stumps I have never seen her trying to rub her legs against one another or against anything. She has always been in good condition and for the last few months has been grass-fed.

I have washed the legs in disinfectant and applied Stockholm, but apparently it was doing no good so the last couple of days I have poured kerosene over the affected parts.

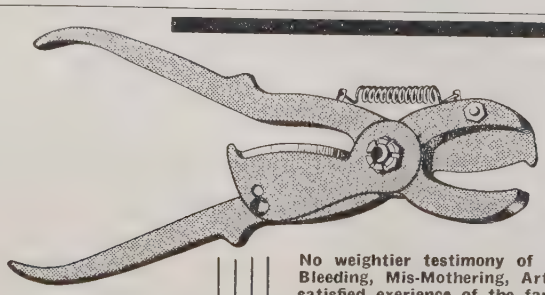
LIVESTOCK DIVISION:—

The condition affecting your horse is known as "chronic greasy" heels. It is, I regret to say, practically incurable even where the most up-to-date treatment is available. To prevent matters from getting worse the parts should be thoroughly cleaned with hot, soapy water and a scrubbing brush, following which a daily application of the following lotion should be made:—

I ounce of zinc sulphate, 1 ounce of lead acetate to 1 pint of water; or an oily preparation of 2 ounces of creosote to 1 pint of linseed oil every third day.

Don't

neglect internal parasites in poultry. Full information is available in the Department's free bulletin No. 19.



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(Signed) J. W. KELLY.

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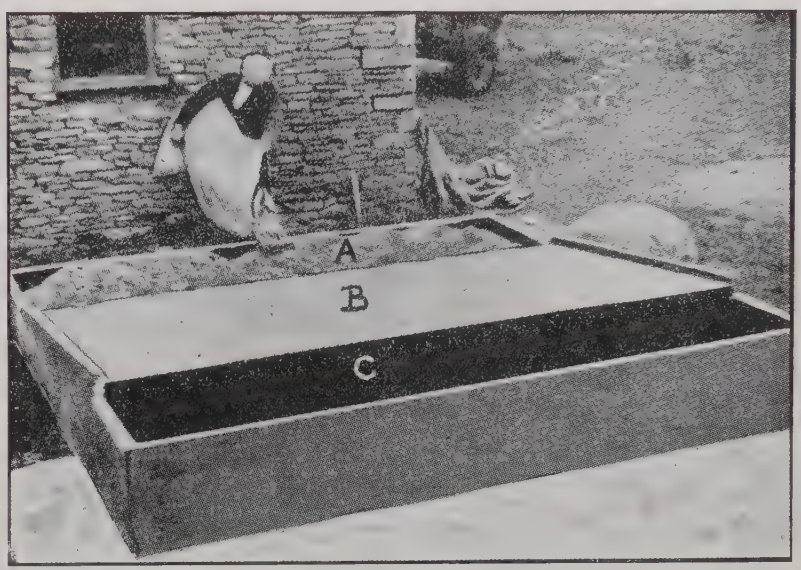
Straw Pulp for Cattle Fodder

OF general interest to farmers in this country, and a practice that may be applicable in those districts where huge quantities of straw are produced as an adjunct to the wheat crop, will be the processing of straw in the manufacture of straw pulp as carried out in Great Britain. Owing to the shortage of imported feeding stuffs to Great Britain, every source of feed supply within the country was investigated and the straw, cavings, and chaff from threshing, which had been wasted in the past, was looked into with a view to utilisation of these materials as feed. These materials contain much fibre and are not easily digestible although they contain quite a satisfactory feeding value.

It was found that by soaking these products in a weak caustic soda solution, followed by thorough washing, quite a palatable fodder resulted, which fodder was found could be used to replace part of the hay and corn, or the roots in rations for meat and milk produce. On account of the low digestibility of straw, farm animals cannot use more than one-third to one-half of the food they contain, but by breaking the fodder down with caustic soda solution it was found that the digestive juices could reach the nutrients of the straw, and thus make available the bulk of the food content in the straw. By processing the straw in this manner it was found that each ton of straw gave 3½ tons of pulp, which contained as much starch equivalent as a ton of hay or 4½ tons of roots.



Method

The processing method consists of soaking the chaffed straw, cavings, or chaff in their natural state in a weak caustic soda solution for a period of from three to twenty-four hours. Different methods are adopted and it depends upon which method is used as to the time of soaking required. If soaked for a short period the material will require to be left on a ramp prior to washing, but if soaked for a long period washing can be carried out as soon as the material is taken from the soaking tank. After the pulp is removed from the soaking tank it is left to drain, and afterwards washed thoroughly with water to remove all traces of soda. The liquid used for the soaking, that is the weak solution of caustic soda, can be used over and over again provided the correct strength is maintained by adding more caustic soda for each batch of straw.

Plant Required

Considerable plant in the way of tanks or underground pits is required to carry out the process, while a fair

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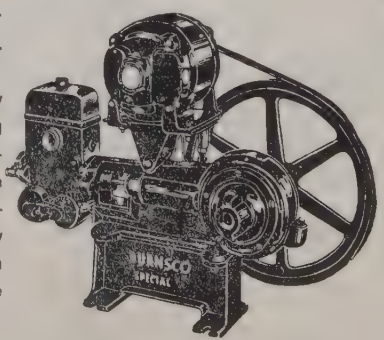

amount of labour is also involved. These two factors would no doubt detract from the introduction of the processing of straw in this country. The usual plant is to have a lower or soaking tank (marked A in illustration) to hold the caustic soda solution in which the chopped straw is steeped. This is usually some 12 feet long by 3 feet wide and up to twelve inches deep. On one side of this tank is a ramp (marked B in the illustration), which slopes gently from the upper or washing tank (marked C in the illustration) to the lower tank, and is used merely as a draining surface for the material after it has been soaked in the caustic soda solution. The size of the washing tank is similar to that of the soaking tank. The soaking tank holds some 200lb. of chaffed straw and two or three batches may be put through in a day, provided the ramp is wide enough to hold these batches after a short steep in the soaking tank. If soaked for only three hours or so the pulp must be left on the ramp until next day when the washing is carried out.

The solution used is made up of 200 gallons of water, to which 30lb. of caustic soda is added, making a solution of 1½ per cent. Each time the tank is recharged with straw a further 16lb. of caustic soda is added with fresh water to bring the solution up to the original mark.

Washing the Pulp

The washing of the pulp is most important as cattle will not eat improperly washed straw pulp. The efficiency of the washing is checked by the colour of the run-off liquid which discharges from an outlet at the bottom of the upper or washing tank. This run-off liquid changes gradually from a dark brown to a pale lemon yellow colour, but never becomes absolutely colourless. At the lemon yellow stage the water will not feel soapy, and the pulp will also be free from soapiness. As a final test the pulp may be tasted and should be free from any soapiness. At this stage it is usually of bright colour and soft to the touch, all the joints crushing easily between the fingers. It contains about 80 per cent. of water, and will keep for some days, but should usually be eaten within a week or it may become mouldy, especially in warm weather.

It is doubtful however whether the practice of making straw pulp will have any practicable application in New Zealand due to the following reasons:—

1. The moderate supply of surplus straw in most districts.

2. The cost involved in building the tanks and plant.

3. The amount of labour that will be involved in preparing straw pulp.

4. The fact that the straw pulp is of no higher feeding value than pasture hay.

—J. M. SMITH, Superintendent, Services Vegetable Production, Wellington.

. . . . Keeps Your Herd in Condition!

This country is at war . . . to win! Unless each cow is in the pink of condition it's not producing as much as it should. If occasionally they seem a little off colour, remember a laxative and diuretic is probably all they need. Give them Green Drench. It's safe and sure!

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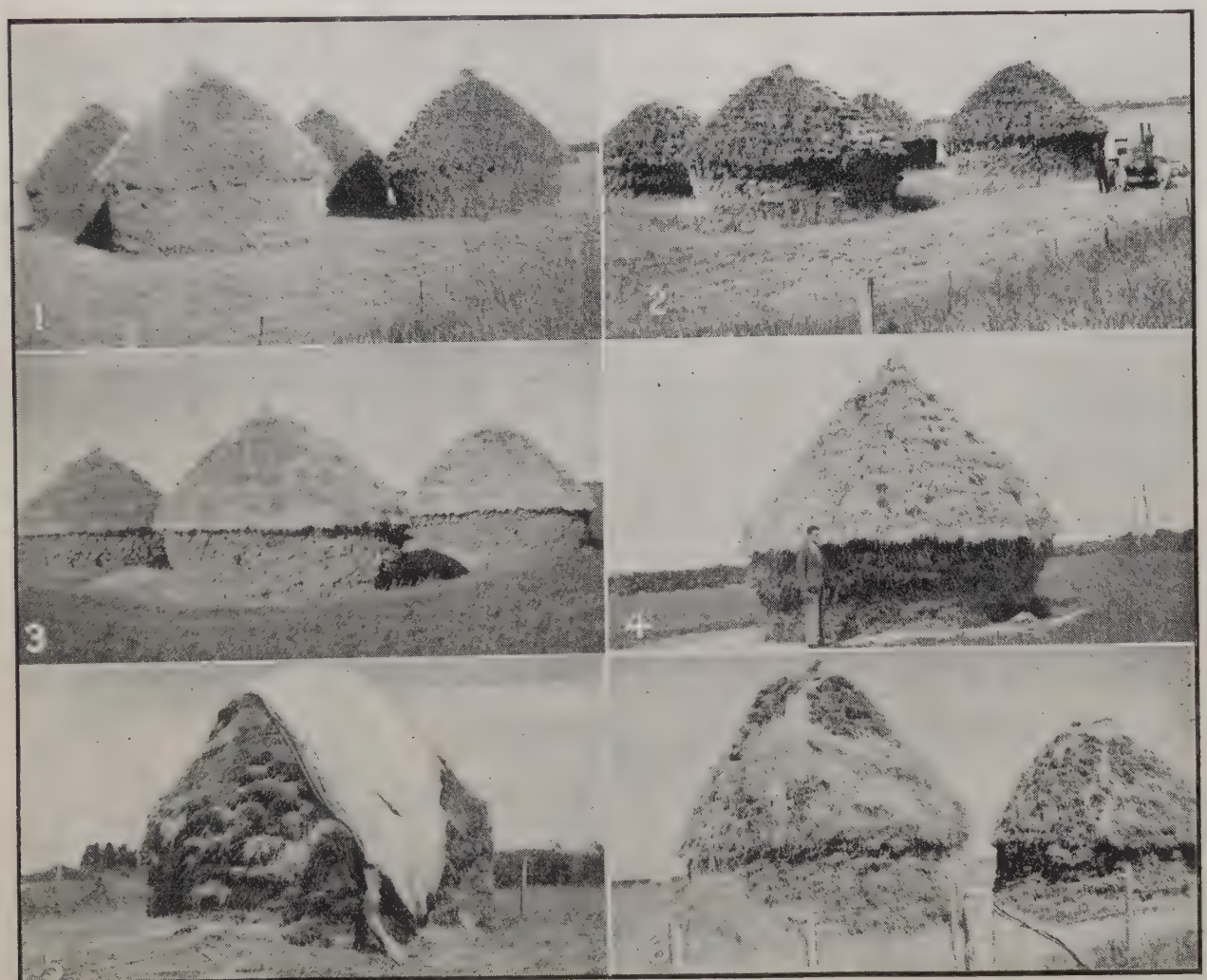
Protect Those Stacks

HAY and chaff are recognised as valuable foodstuffs often costly to produce. They also have a great potential value as an insurance against a shortage of feed at critical times. Yet, even now, there are still a number of farmers who, while taking great care of their seed harvest, treat their reserves of fodder in a very casual manner. Throughout the country in the latter months of the year we see poorly built stacks which have suffered excessively through being pulled by birds, damaged by weather, or even torn about by stock that have been allowed access to them. Many stacks suffer severely in this respect, causing a considerable loss to the farmer concerned. The loss to the country as a whole must be tremendous.

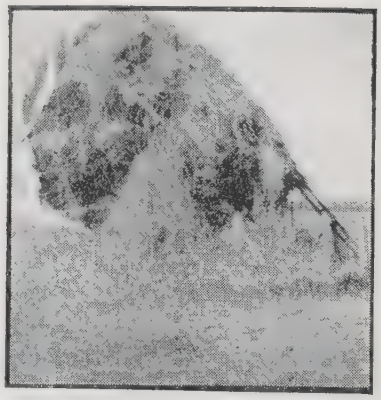
In normal times many farmers top their stacks with straw, covering this with a sheet made of hessian or sacking. This provides good protection, but under war conditions good sheets are not always procurable. Thatching appears to be the obvious alternative. Although labour difficulties may occur, this is a job which can be done at odd times after more pressing work has been completed. Good thatching is an art; it is also more a matter of carefulness and an ability to take pains than of hard physical work. The cost is reasonable, working out at only a few shillings per ton. With hay or sheaves at their present value the cost of thatching or covering will return a good dividend on the material saved.

Thatching Material

Care must be taken in selecting the thatching material. Oat straw is soft and spongy, retains the moisture and should be used only where better material is not available. Clean wheat straw makes a good thatch and is usually plentiful in cropping districts. A few rounds with the binder on a headed crop will provide ample material. Where procurable rushes make an excellent job and if carefully removed when the stack is opened up, may be used a second time. Some farmers grow small areas of ryecorn solely for thatching. This is a practice that has much to recommend it, rye straw being clean, strong and less absorbent than wheat straw.



1. Four solid, well-built stacks. *2.* Twelve months later. Even good stacks show signs of weathering and some damage by birds after this time. *3.* Good protection from wind and rain. *4.* Even after a severe winter, a well thatched stack is still protected. Birds have made small holes in the thatch, but no pulling has taken place. *Note.* The even slope of the roof, right up to the peak of the thatch, leaves no flat places to absorb water. *5.* A sacking cover gives good protection, but if not securely fastened will soon be torn about by the wind and the stack exposed to the weather. Stock are never slow to take advantage of the removal of a protective fence. *6.* Small birds can do a considerable amount of damage in a short time.



7. The fence protected this stack from stock, but the birds soon found out that the cover had been blown off.

Farmers are urged to review their present methods and where possible to **cover their stacks!** Every ton of foodstuffs saved is a definite cash saving to themselves and a direct contribution to our war effort.

—R. INCH, Fields Instructor, Ashburton.

Radio Broadcasts

RADIO talks to farmers will be given from Station 1YA, Auckland, at 7.15 p.m. on the following dates:—

July 5.—"Some Aspects of Maize Growing," by Mr. J. R. Murray, Instructor in Agriculture, Department of Agriculture, Whangarei.

July 12.—"Insects and the Plant," by Mr. W. Cottier, M.Sc., Entomologist, Plant Diseases Station, Auckland.

July 19.—"Pig Nutrition," by J. H. Hitchcock, Fields Instructor, Department of Agriculture, Patumahoe.

July 26.—"Young Farmers' Clubs' Session," to be arranged by the Western Bay of Plenty District Committee.

Pig Industry Broadcasts

UNDER the auspices of District Pig Councils concerned, broadcasts will be delivered in July as follows:—

1YA, Auckland, July 15, 6.50 p.m.—"Answers to Questions," by H. E. Clark, Supervisor, Auckland District Pig Council.

2YA, Wellington, July 20, 7.15 p.m.—"Creep Feeding," by C. H. M. Sorensen, Supervisor, Taranaki District Pig Council.

2YH, Napier, July 15, 7.15 p.m.—"Care of Pigs after Weaning," by I. H. Owtram, Supervisor, Tarawhiti District Pig Council.

3YA, Christchurch, July 15, 7.15 p.m.—"Crops to Grow for Pigs," by H. McIntosh, Supervisor, Canterbury District Pig Council.

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Time Saved Equals Extra Wagons

Slaughterings of Stock

THE following returns of slaughterings of stock at meat-export slaughterhouses and abattoirs for the twelve months, May, 1942, to April, 1943, have been compiled by the Livestock Division:—

District.	Cattle	Calves	Sheep	Of which Ewes were	Lambs	Pigs
North Island.						
Meat-export Slaughterhouses—						
Auckland	262,550	603,917	426,582	317,843	1,515,939	329,283
Poverty Bay-Hawkes Bay	66,918	59,263	687,913	445,004	1,686,941	25,834
Taranaki-Manawatu ..	109,444	213,806	418,443	300,994	1,614,747	160,471
Wairarapa-Wellington ..	49,106	28,320	348,411	231,463	1,155,300	33,261
Totals	488,018	905,306	1,881,349	1,295,304	5,972,947	548,849
Abattoirs	127,683	40,113	600,448	261,026	118,267	137,678
North Island Totals ..	615,701	945,419	2,481,797	1,556,330	6,091,214	686,527
South Island.						
Meat-export Slaughterhouses—						
Nelson-Marlborough ..	1,774	10,724	28,810	16,714	203,637	10,295
Canterbury-Westland ..	14,018	39,976	409,502	348,979	2,360,628	33,294
Otago-Southland	13,578	37,964	302,232	260,891	2,576,737	6,712
Totals	29,370	88,664	740,544	626,584	5,141,002	50,301
Abattoirs	82,773	20,134	393,674	206,047	77,367	44,529
South Island Totals ..	112,143	108,798	1,134,218	832,631	5,218,369	94,830
Dominion.						
Meat-expt. Slaughterhouses	517,388	993,970	2,631,893	1,921,888	11,113,949	599,150
Abattoirs	210,456	60,247	994.122	467,073	195,634	182,207
Grand Totals	727,844	1,054,217	3,616,015	2,388,961	11,309,583	781,357
Same Period, 1941-42— Meat-export Slaughterhouses and Abattoirs ..	572,506	1,065,606	4,086,658	2,669,909	11,662,209	918,460
Same Period, 1940-41— Meat-export Slaughterhouses and Abattoirs ..	620,781	1,057,529	3,672,528	2,479,645	11,461,269	933,558

Slaughterings of Pigs

The 94,648 pigs slaughtered at meat-works and abattoirs during the month of April, 1943, were distributed in weight ranges, approximately, as follows:—

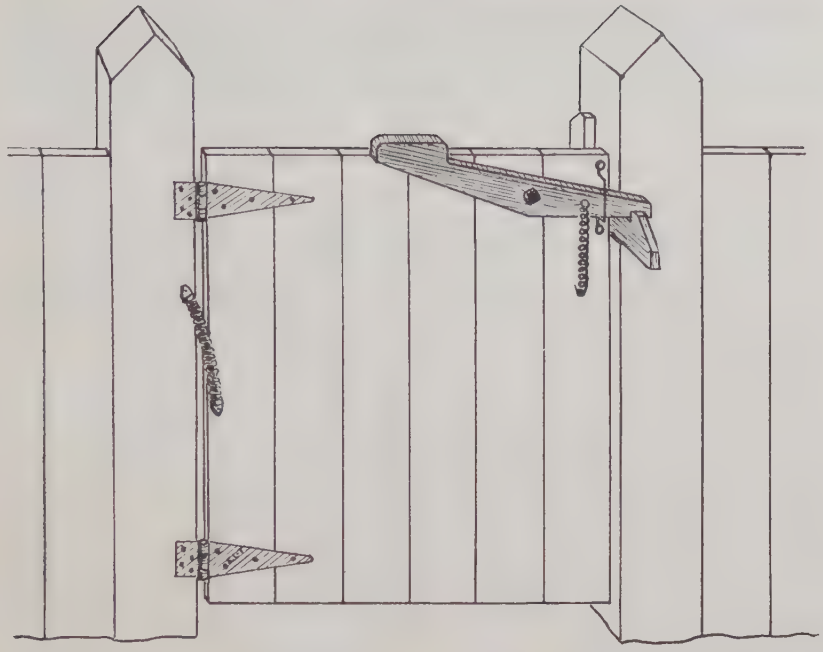
Up to 60 lb.	2,766
61 to 120 lb.	51,075
121 to 160 lb.	32,554
161 to 180 lb.	3,257
Over 180 lb.	2,179
Sundries	2,817
	94,648

The grading of porkers was 91 per cent. of 1st quality, 9 per cent. of 2nd quality.; and that of baconers was 82 per cent. of prime 1's, 14 per cent. of prime 2's, and 4 per cent. of 2nd quality.

In the different weight ranges of baconers the grading was as follows:—

121-160 .. .. 84%, 13%, 3% of P1's, P2's and 2nds respectively.
161-180 .. .. 66%, 29%, 5% of P1's, P2's and 2nds respectively.

Handy Gate Latch



Wire Guide.

Catch on Post.

THIS easily made latch has the advantage over other forms in that one has only to take hold of the top of the gate where the projection is to open it, and the latch is lifted in the same movement. It is particularly useful when one's hands are full, as the projection can be knocked down with whatever is being carried and the gate kicked open.

A piece of wood is cut to the shape shown and pivoted on the gate by a coach screw, while the catch on the post is nailed into a slot cut in the latter. It is important that this catch should have a very gradual slope if the gate is to close itself. A guide made of stout fencing wire is nailed at the edge of the gate to prevent the latch being pulled away and to limit its movement, and to return the latch to its correct position a piece of old spring or strip of motor-tube rubber is used. Allow plenty of lift as the gate will probably sag in time.

—S. LEONARD TAYLOR, Clerical Staff, Palmerston North.

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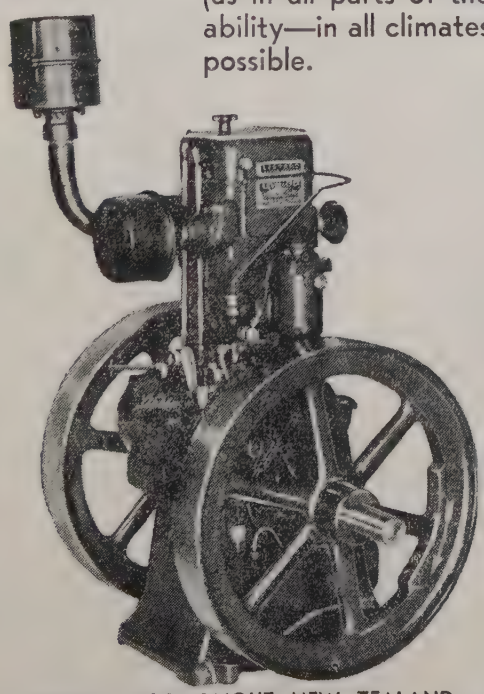

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The Sclerotia of Sclerotinia Sclerotiorum (Lib.) Mass are not Poisonous

— By —

By I. J. CUNNINGHAM, Animal Research Station, Wallaceville.

Sclerotinia sclerotiorum is a fungus which may attack a wide variety of garden and farm crops. The host plants, a full list of which has been given by Brien (1), (2), include garden flowers such as anemones, dahlias and delphiniums; vegetable plants such as beans, peas, beet, celery, lettuces and tomatoes; and farm crops such as chou moellier, Jerusalem artichokes, rape, swedes and turnips.

The life history of *S. sclerotiorum* has been fully described by Cunningham (3) and Chamberlain (4) in previous issues of this Journal. Reference should be made to these articles for details, and for the symptoms shown in plants attacked by the fungus.

Whatever the host plant, the mature fungus forms sclerotia, which are the resting stage in the life cycle. These sclerotia are hard bodies, black externally and white or pinkish-white on fracture. They are irregular in shape and may be more or less rounded, and up to one-quarter inch in diameter, or more or less cylindrical and up to half-inch long and one-eighth inch in diameter. They form within the hollow stems of plants like chou moellier, potatoes and tomatoes, in the stems and between the leaf bases of rape, cabbage and lettuce, or in the decayed mass of turnips, swedes, pumpkins, parsnips or carrots.

Under some circumstances the sclerotia may be eaten by stock; for example, the possibility exists that pigs may ingest sclerotia with infected artichokes, and that sheep may ingest them with infected chou moellier, cabbage or potato haulms. In some countries sheep are employed to clean up the remains of an affected lettuce crop after the unaffected plants have been harvested.

Feeding Tests

Enquiries are sometimes made regarding the toxicity of sclerotinia, and the matter was of sufficient interest to carry out feeding tests when the opportunity arose. Such an opportunity presented itself when several pounds of sclerotia* separated in dressing seed of chou moellier were received. These sclerotia were fed to rats and a pig.

Six rats were fed for eleven weeks, a ration consisting of a mixture of grains, meatmeal, dry milk, minerals and vitamins and containing 25 per cent. by weight of ground sclerotia. The rats grew from an average of 126 grams body weight at the commencement of the feeding period to an average of 191 grams at the end. There were no signs of any physical disturbance at any time during the experiment. No macroscopic or microscopic abnormalities were revealed at autopsy. The six rats ate, between them, 6 lb. of sclerotia, i.e. an average of 1 lb. per rat.

One pig was accustomed to a diet of grain and skim-milk and was fed approximately 2 lb. grain and 7 lb. milk daily. For five successive days ½ lb. sclerotia replaced an equal weight of grain. The pig's appetite remained normal, it continued to grow and it remained completely normal. No macroscopic or microscopic abnormalities were noted at autopsy which was made four days after the last lot of sclerotia had been fed.

Thus the ingestion of large quantities of sclerotia of *S. sclerotiorum* proved completely harmless to rats and a pig. It was concluded that these sclerotia are not poisonous to such animals.

There are no published accounts of other work on the toxicity of *Sclerotinia.* Brown (5), however, fed sheep up to 16,000 sclerotia over a period of ten days in an experiment to determine the extent to which these animals would digest and destroy the sclerotia. He found that over 95 per cent. of the sclerotia were digested and he made no reference to any adverse effect on the sheep. Brown, moreover, mentions the use of sheep to clean up lettuce crops affected by *S. sclerotiorum.* It is safe to assume that no toxic effects are caused in the sheep so employed.

From the work at this station and from the work on sheep mentioned above it can be concluded that the sclerotia of *Sclerotinia Sclerotiorum* (Lib.) Mass are not poisonous.

References

1. Brien, R. M. (1939): Dept. Sci. and Indust. Research N.Z. Bull. No. 67.
2. Brien, R. M. (1932): N.Z. J. Agric., **44**, 127.
3. Cunningham, G. H. (1927): N.Z. J. Agric., **34**, 402.
4. Chamberlain, E. E. (1932): N.Z. J. Agric., **45**, 260.
5. Brown, J. G. (1937): Phytopathology, **27**, 1045.

* Mr. J. C. Neill, Assistant Director, Plant Diseases Division, Department of Scientific and Industrial Research, Auckland, examined the sclerotia and identified them as *Sclerotinia Sclerotiorum* (Lib.) Mass.

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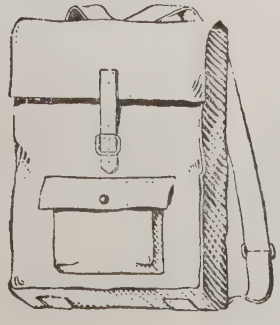

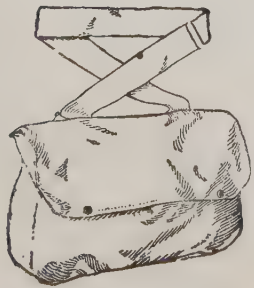

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In the Orchard and Vineyard

Orchard Notes

Orchard Management—Pruning

THE main orchard work at the present time comprises the winter pruning, and this work should be pushed ahead as rapidly as possible while the weather is fine. The early completion of this work enables attention to be focussed on the forthcoming spraying season, and preparation can be made for the application of winter oil sprays to stone fruits in July and to pip fruits in August. A late start with pruning results in an extension of the work until the end of August or the middle of September, and late finishing of this work clashes with the commencement of the spraying season and causes delay to the application of the important "base" sprays.

Old Trees

At times the orchardist is faced with the renovation of large, old trees which have stagnated and become unprofitable. Frequently this condition is associated with indifferent pruning during the past years, and the trees, as a result, are crowded with limbs and spent laterals. The renovation of such trees calls for intelligent use of the pruning shears.

Stone Fruit Trees

Stone fruit trees generally do not present such a problem for renovation as do pip fruit trees. Giving due consideration to the condition of the particular tree to be treated and its state of vitality, stone fruit trees, in general, should receive relatively severe pruning to re-invigorate them and promote strong new growths to replace the old barren leaders. The complete renovation of stone fruit trees can usually be carried out over a two-year period, and little loss of crop will take place beyond the first year.

Apples and Pears

The renovation of apples and pears is usually a more complex problem. Where the number of leaders is excessive these should be thinned. Old and spent lateral wood should be pruned back to induce healthy new wood in its stead. Drastic thinning of old spurs is generally essential in the treatment of old pear trees. The amount of cutting in the first year of renovation should be sufficiently great

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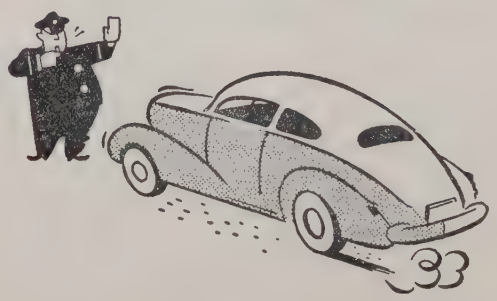

• Unequally adjusted brakes cause one or more tyres to do the most work — which makes those tyres wear out faster.

You can generally tell if your brakes are not equalized by the fact that your car tends to pull over to one side when you step on the brake.

But don't wait for that danger signal! Have your brakes inspected now—and regularly thereafter—if you want more mileage and safer driving from your tyres.

GOODYEAR TYRES

to re-invigorate the tree to the extent of promoting considerable new growth, while the pruning in subsequent years need not be so severe. Care should be taken, however, to avoid over-cutting and thus inducing a mass of rank growth difficult to control. The broad rule to follow in renovating a tree should be to thin out the crowded leaders, leaving those best placed to provide the future framework.

To prevent decay setting in where large cuts have been made and also to facilitate healing of the wound the cuts should be cleanly made and then coated with some protective covering such as bitumastic paint.

Planting

Where planting is to be undertaken or replanting is necessary, this work should be carried out in early winter except where soils are excessively wet during winter. Under such conditions planting is best left until the spring. The holes may be prepared early and the loosening of the subsoil and the application of lime will prove of benefit. When the trees are received from the nursery the bundles should be undone immediately, and the trees heeled-in in a shady position to await planting out.

Wet Weather Work

On wet days during the winter many odd jobs can be carried out under cover. The spray outfit may be cleaned and adjusted and a minor overhaul given to the tractor. Much delay and annoyance is frequently caused by the rusting of nuts and bolts which have finally become immovable. Nuts likely to be used when adjustments have to be made may be slackened and oiled and then screwed tight again. The blades of discs and the share and face of the plough may be kept in good condition by the application of used motor oil to the surfaces when they are not in use and are laid up for the winter. Where possible a coat of paint should be applied to the ironwork of the implements to prevent rust. Every effort should be made to maintain and preserve implements in sound workable condition, especially these days when replacement is both costly and difficult.

—R. G. I. HAMILTON, District Supervisor, Horticulture Division, Auckland.

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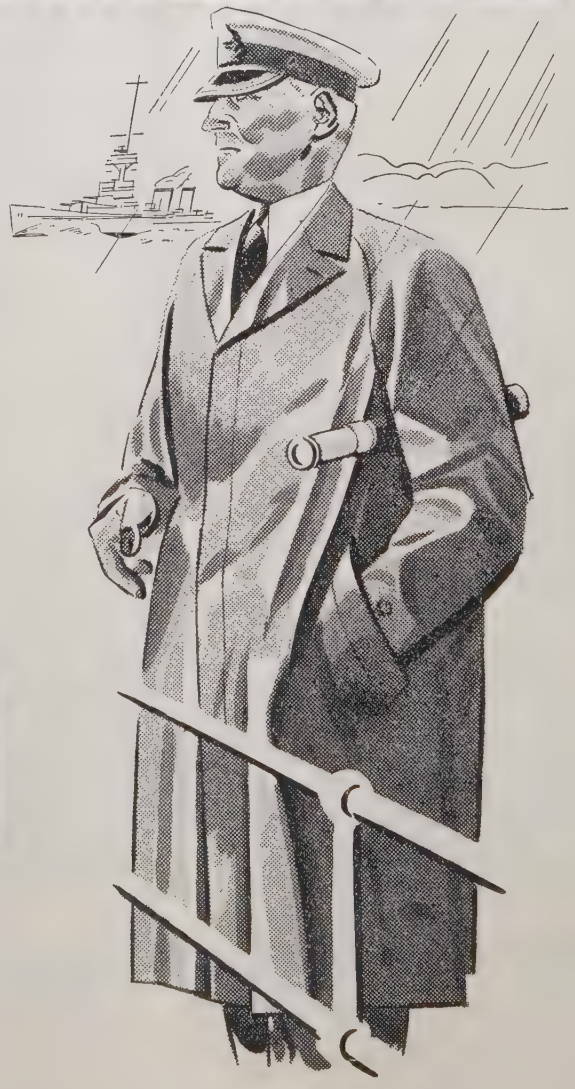
Rainsters for the Navy, Rainsters for the W.A.A.F., Rainsters for the W.R.N.S., the Red Cross Transport . . . more and yet more demands on Rainster! That's why you haven't been able to get yours. Yes, we know you need one! Everybody with a civilian war job — industry, E.P.S., E.F.S., Home Guard—needs a Rainster to weather all weathers. Most Rainsters these days are on *very* active service. But you'll agree the Navy, the Air Force, the Army, must come first. The war must be won! And Rainster House is doing its best, turning out Rainster coats faster and faster for the services. This means fewer in the stores for you. Yes, a Rainster *is* worth trying for.



Citrus Notes

Citrus Pests—Chewing Insects

CHEWING insects which attack citrus trees are Dicky-rice weevil (*Maleuterpes spinipes*), Citrus-borer (*Aemona hirta*), Leaf-roller caterpillar (*Tortricid moth spp.*) and Cicada.

Dicky-rice weevil was first recorded in New Zealand in 1935, and since that date has become established at Kerikeri, and to a limited extent at Auckland. The weevil itself is seldom seen in the daytime, but the damage caused to foliage and fruit is characteristic. An adult weevil eats pieces out of the young foliage and fruits. As a result the leaves are distorted and frayed, and the fruits have wide, irregular, discoloured furrows.

The female lays its eggs in the ground and the larvae feed on the roots of citrus trees. These ground weevils are difficult to exterminate; but as the greyish-brown adult has never been known to fly it can be prevented from gaining access to the foliage and fruits by applying a sticky Ostico tree-band around the main trunk of the citrus tree, or separate bands around each leader. This grease-like band should be two inches wide and one-eighth inch thick and applied to a grease-proof paper which is first tied to the tree trunk. The band may be applied direct to the tree, but to avoid injury to the bark the level of banding should be altered from year to year. Before banding commences the tree should be jarred in order to dislodge any weevils on the tree at the time. After banding, the citrus tree branches must be pruned clear of the ground and all weed growth under the tree suppressed; otherwise a weevil may obtain access to the citrus tree by climbing up the tall weeds or climbing directly on to the lower branches, thus rendering any tree banding futile.

Citrus-borer (*Aemona hirta*) is a native long-horned beetle which causes extensive damage to unthrifty citrus trees.

The adult beetle is seldom seen in the orchard, but flies by night and is attracted by light. These adults appear to be most numerous about December, and may then be captured near any light. If caught, the beetle emits a high-pitched buzzing sound. The eyes are black, but the body, legs and antennae or feelers are a reddish-brown colour. The body is relatively narrow and an inch long; the antennae are a similar length, and the legs are about ½ in. long. The female beetle lays its eggs on cut surfaces or in dead wood. The larva, which hatches out a few days later, is a creamy grub about 1½ in. long and has a dark brown head. It is whilst in the larval stage that the beetle is most destructive to citrus trees.

By tunnelling the larva consistently works downwards towards the main trunk of the tree. As it moves forward the larva digests the wood and emits it as borings which accumulate at the mouth of the tunnel. Generally only one larva is found in any one tunnel. The main tunnel is down the length of the branch, but at intervals there are side tunnels which are probably used for ventilation and the emission of borings. In addition the larva may make a tunnel around a branch, especially where such branch is about ½ in. thick. This type of boring generally results in the branch snapping off where it has been completely girdled. The larva appears to thrive best in dead wood exposed to rain.

Apart from dead branches and broken limbs caused by the citrus-borer, an important indirect effect is that the wounds are easily infected by spores of fungi; in fact, the fungous disease bark-blotch (*Aschochyta corticola*) is often closely associated with citrus trees infested by citrus-borer.

Prevention of injury by citrus-borer consists in keeping citrus trees in a thriving condition through good growing conditions — adequate, regular water supply and plant nutrients, and by keeping trees well pruned—open to the air and sunlight, and free from dead wood.

The remedial treatment, if citrus-borer has gained access, is by pruning and burning any infested branch up to ½ in. thick. However, if the borer had entered a main limb first, neatly prune off the lateral by which it gained access, then block all noticeable side holes with petroleum jelly and inject benzine down the central hole. Finally, carefully cover the main hole also with petroleum jelly. The benzine fumes will penetrate down the tunnel and kill the larva present. Ruthless cutting of large limbs in a search for citrus-borer should never be done, as it is destructive and unnecessary.

(To be continued.)

—A. M. W. GREIG, Citriculturist, Wellington.

Cool Storage Notes

Causes of Deterioration in Fruit Held in Cool Storage

SUPERFICIAL scald on Dougherty apples has caused losses late in the season. The cause of superficial scald in this variety is the accumulation within the apple tissues of certain gases that are produced by the apples themselves as a result of respiratory activity. It will be seen, therefore, that the lowest temperature at which the variety can be held, i.e. 30-32 deg. F., will be the best temperature to check respiratory activity, the advancement of the maturity of the fruit, and the accumulation of these gases within the tissues of the fruit. Superficial scald will develop more readily on poorly grown fruit or on fruit that is immature or not well coloured. The losses from discolouration will be greater when the fruit is held at temperatures higher than 33 deg. F. Faulty stacking of the fruit in cool storage and poor ventilation will also increase the percentage of loss. Open stacking that will provide for air movement will contribute to the prevention of superficial scald by assisting ventilation and minimising temperature fluctuations.

Mould and Fungi

Mould and fungous spores that develop on fruit when held in cool storage have, for the most part, been brought into the store on the surface of the fruits, rather than been transferred from adjacent infected fruit by the air circulating within the store. These spores have been deposited on the surface of the fruits while they are still on the trees, mostly by the evaporation of soil or surface moisture containing the spores and the condensation of the spore-ladened water vapour on the limbs of the trees or on the leaves or fruits. The spores may also be deposited on the fruits by contact with other infected fruits or with infected fruit cases, parts of the sizing machine, or bins with which the fruits are brought in contact.

The principal causes of infection have been shown, but the factors that influence the growth and development of the spores in cool storage are:—

1. High temperatures and delays that occur prior to the fruit reaching cool storage.

2. Injuries such as case bruising, broken skins, stem punctures or broken stems.
3. The natural moist conditions found within the lenticles or open calyx (*Calycine sinus*) of the fruits.

Atmospheric humidity within the storage chamber when controlled at from 85 to 90 per cent. is not an active medium for the transference of mould or fungous spores, as neither their growth nor transference is depressed to any significant extent by lowering the relative humidity below these values. But the development of wilt and shrivel of the fruits is increased on susceptible varieties by a reduction of the relative humidity of the storage atmosphere below 85 per cent.

In the control of mould or fungous growth it is essential:—

1. To commence with orchard and packing shed sanitation.
2. To take care in harvesting, handling, packing and transporting fruit.

The relative humidity of the storage atmosphere is affected by temperature variations in different parts of the chamber, and a reliable method of bringing about improvements in fruit cool stores is:—

1. By the installation of modern automatic temperature control apparatus, to obtain even cooling in time.
2. By the installation of evenly spaced ceiling cooling pipes and drip trays to provide even cooling in the space.

The application of the above is a simple method of controlling the temperature and relative humidity conditions of the storage atmosphere which are essential in maintaining the conditions and bloom of long storage fruit.

Apples and Pears

Care is necessary by officers responsible to release the mid-season varieties of apples and pears from cool storage before they reach an over-stored condition. Delays that have occurred before storage will also have the effect of reducing the storage life of the fruit.

Maintaining the specified temperatures for the different varieties of apples will greatly assist in prolonging their storage life, and thus conserve the stocks of fruit that have been set aside to supply the markets late in the season.

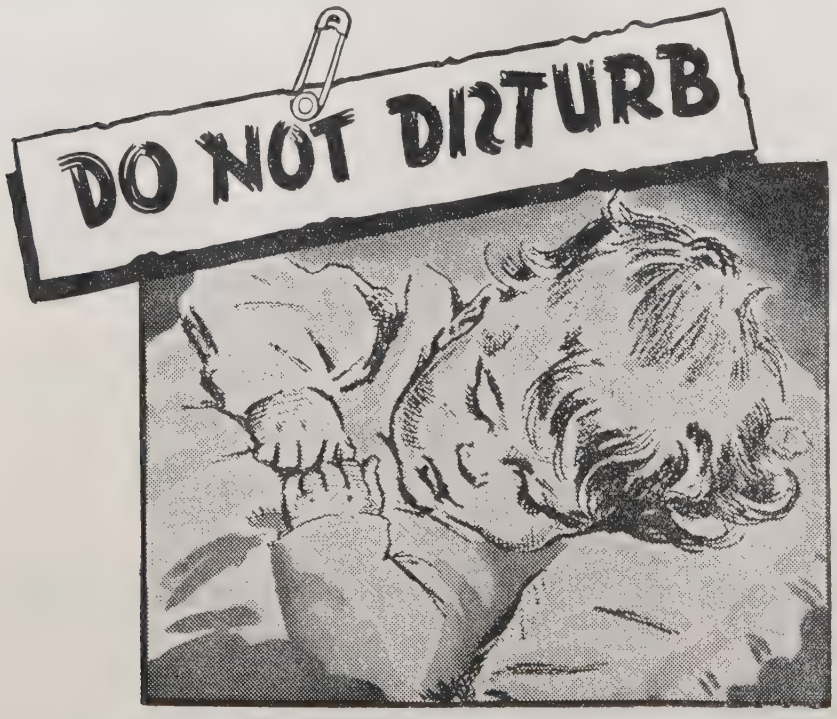
Refrigeration Plants

The Refrigeration Supervisor (Mr. F. W. Grainger) wishes to draw the attention of owners of refrigerating plants to the necessity of a careful examination of their plants for ammonia leaks to prevent loss of ammonia, as a shortage of supplies is at present causing concern. One of the most prevalent sources of loss is at the compressor rod gland, and every effort should be made to maintain the gland packing in good order to prevent leakage. Occasionally a thorough inspection of the whole ammonia system should be carried out to detect leakages, and when detected they should be promptly attended to. This is essential to prevent wastage and thus conserve ammonia supplies.

—A. A. POWELL, Cool Storage Officer, Wellington.

Pigs

THE basis of success in pig production is management. The object of the Department's **free bulletin**, "Modern Methods of Pig Production," is to provide some of the essential information necessary to successful management. If you have not a copy of this bulletin send for one today.



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Guide for the Home Garden

Vegetables for Late Spring and Early Summer

"I WAS expecting a visit from you," said the farmer-gardener after the usual morning salutations had been exchanged, "because in the course of a conversation with my neighbour I learned that he had been advising you how and why he adopted certain practices on his particular garden area. Of course, what he told you may be quite all right on his type of soil; but the soil on my garden is not quite the same as that on the area he cultivates. That being so, I feel sure you will agree that different methods of manuring may be necessary." (The officer concurred and intimated that he would be glad to know just how the gardening operations were carried out which seemed to produce such admirable results in the quality of the vegetables which he was admiring.)

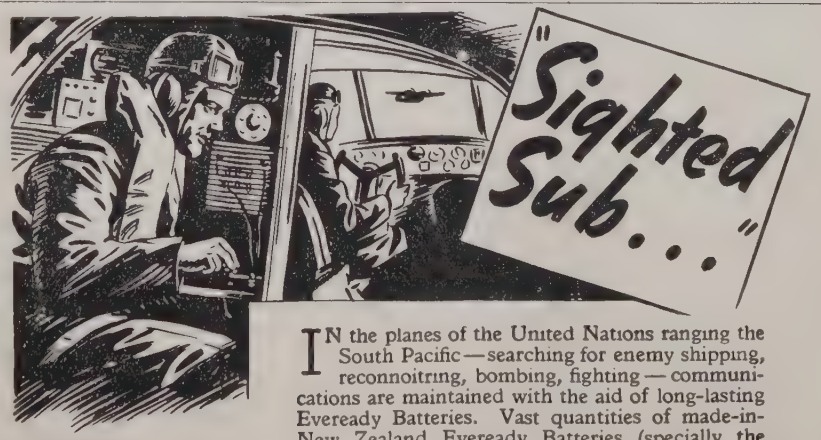
"Well, to begin with," said the farmer, "when I started to lay out this part of the farm for a vegetable garden I noticed that the soil was fairly light, appeared to be without organic matter, and seemed altogether to be in poor condition. The top soil is about 10 inches deep, and there is a kind of friable clayey subsoil. I ploughed it down to a good depth, taking care not to bring any of the subsoil to the surface. I consider it bad gardening to bury the top soil by bringing the poor soil underneath it to the surface." The officer's opinion on this point was solicited, and an endorsement of what was being practised was readily given. At the same time reasons were advanced why such a subsoil as that underlying the top soil should be broken up. These were to the effect that such breaking up by subsoil digging increased drainage facilities, and drainage, the officer suggested, was one of the main essentials for good vegetable production. In addition, this practice provided means for the circulation of more air in the soil, which was so necessary for maintaining the health and vigour of plant life.

"It is remarkable how your opinion agrees with my experience," the farmer remarked, "for I had previously observed how plants flourished on any part of the garden which I had treated in this manner. But I would like to tell you how I started to bring this light soil up to the fertile condition it is in at present. Before I dug it over first I gave it a heavy dressing of well-rotted cow manure, and when I say a heavy dressing, by that I mean that I put this manure on at the rate of about 20 tons to the acre. After digging that in and breaking the top soil up to a reasonably fine tilth I sowed it down with lupin seed and let this crop grow until it was well matured before I turned it under. About a month afterwards I opened up some shallow furrows and put into these a mixture, by weight, of 1 part of sulphate of ammonia and 2 parts super, ¼ lb. to 18ft. of row, worked it into the top soil and then set out some savoy cabbage plants. Well, I did get a surprise; these plants never halted in their growth. After this experience I came to the conclusion that well-rotted cow manure applied to light soil would give good results in helping to bind the soil together." (The visiting officer agreed that this was in keeping with results which had been obtained elsewhere, and suggested that the information should be passed on to other farmer gardeners who might equally well profit by this experience on light soil for producing vegetables.)

Preparation of Soil

July is the month when a start should be made towards the production of vegetables for late spring and early summer use. Provided the garden soil has been well dug and the subsoil broken up, "weathering" will have taken place which will enable a finer tilth to be produced than would be possible if digging were carried out at the present time. Any period of favourable weather, however brief, provided the soil is in workable condition, should be utilised in making preparations for setting out early plants. Operations in this direction will assist towards weed control, and will be helpful in aerating the soil. Work of the kind suggested does not mean that the area of the garden intended for early planting or sowing should be flattened out and raked over. It is not desirable at any time to have the soil in a packed condition, but the more it can be worked during July without treading on it the better condition it will be in either for sowing seeds or setting plants.

Once again it is considered advisable to direct the attention of the home gardener to the necessity for vegetable production to the limit of



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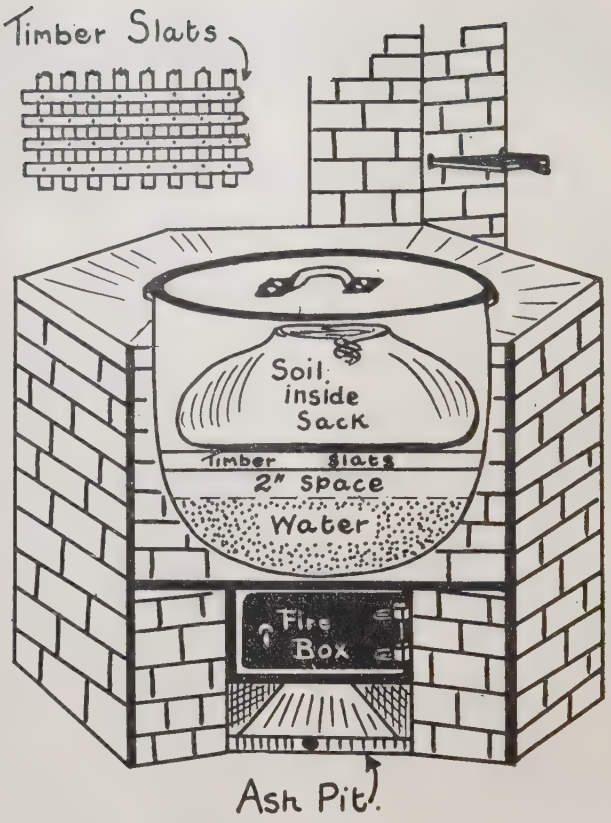
the capacity of the garden and, indeed, if practicable, to increase the size of the garden area for the purpose of increasing production. Unfortunately, production is not always increased by the cultivation of additional areas of soil, and it is unwise to attempt to cultivate more land than time and labour will permit to be done efficiently. Conditions at present obtaining in the Dominion are not, however, normal, and may presently call for still greater effort on the part of those who are, fortunately, placed in the position of having the opportunity to increase their vegetable production.

Soil Sterilisation

Craving for almost unprocurable fruits which may contain some desirable vitamin does not seem justified when, perhaps, the equivalent may be produced in the vegetable garden. Although it may appear somewhat premature, it is recommended that preparations be started for next season's tomato production.

This should start by getting together the potting soil ready for sterilising. If leaf-mould is not available the necessary quantity of any good black soil should be obtained and mixed with a third of its bulk of clean sharp sand; about as much as would fill an apple case will be sufficient. As formalin, which is largely used for chemical sterilisation of soil is not in plentiful supply, the quantity of soil indicated above may be conveniently treated in the following manner: (See illustration) Fill the washhouse boiler about one-third full of water. Next place several timber slats across the boiler about 2 inches above the water, and cross these with more timber slats laid in the opposite direction. The soil, after having been put into a sack and fastened, can be set on the timber, the lid of the boiler placed in position, and the fire lighted underneath. The soil should be kept as loose as possible in the bag and well spread out to contact the rising steam, the water brought slowly to boiling point and maintained at this temperature for an hour. No more firing need be done. The lid of the boiler should **not be removed** until the soil has cooled down to normal temperature.

If this operation is properly carried out the soil so treated will be efficiently sterilised, but the greatest care must be exercised to prevent re-contamination. It should be emphasised that attacks on plants by fungi or bacteria in re-contaminated soil are more virulent than is usually the case with untreated soil. The bag, with its contents, may remain intact after removal from the boiler until it is intended to use the soil.



Method of sterilising soil.

Don'ts

Don't

put the urgent gardening job off till tomorrow—that day never comes.

Don't

use coal tar or any disinfecting products derived from it for treating seedling boxes or plant-growing structures. Seedlings will not show vigorous growth in the atmosphere created by its presence.

Don't

neglect gardening tools. After cleaning, they should be wiped with an oil-soaked rag, kept handy for this purpose.

Don't

under-estimate the difficulties of breaking in an extra piece of land for vegetable production. Remember, it has been stated that two men going to explore new country will kill each other for the gold which may be there; but if a man and a woman go out together they will conquer the desert. The moral should be plain —solicit some assistance; it will be forthcoming all right.

"Golden Acre" Cabbage

From 12th to about 21st July—earlier in southern districts—is about the right time to sow seeds of this cabbage variety. A seedling box may be used for a seed bed or a sunny, sheltered part of the garden. Wherever the seed is sown it is advisable to place it in rows. Broadcasting is wasteful of seed and induces damping off with consequent loss of plants and weakening of those remaining which may ultimately be set out in the garden. Germination should take place in a week or ten days after sowing. If the leaves of the seedlings subsequently begin to develop yellow colouring they should be given liquid manure, preferably nitrate of soda, one teaspoonful dissolved in a gallon of water. This solution applied two or three times at weekly intervals will correct the clorotic conditions referred to above.

Peas

This vegetable is among the first of the season which may be planted in its permanent position. A sheltered part of the garden and a well-prepared soil are desirable for early production. A shallow trench may be opened, in the bottom of which the seed can be pressed one inch deep and covered

with some good potting soil. To protect the seed and the young plants from attacks by birds or slugs, no hesitation should be made in applying burnt lime—hydrated lime will do—in the furrows on top of the seed and to the seedlings. This is an inexpensive and efficient protectant. W. F. Massey and Earlikrop are recommended varieties for early sowing.

Broad Beans

Seeds may now be sown in a deep rich soil. The plant thrives in cool districts and is best sown early. It should not, however, be allowed to grow more than 3ft. high. At this height the plant should be stopped by "pinching" out the top growth. This will assist early maturity of the pods. If sown in rows these should be separated by not less than 2ft. 6in. and the seed sown in flat-bottomed trenches 3 to 5 inches apart.

Lettuce

Plants from early sown seed may be set out in favourable weather towards the end of July. For this early planting a raised bed is desirable. Effective drainage will thus be assured if and when excessive rainfall may occur. Planted in rows 12 inches apart and the same distance allowed between the plants, and on soil that has been manured with blood and bone applied at the rate of 3 to 4 oz. per square yard, should give good results. Webb's Wonderful and Success are standard commercial grown varieties. For cold districts Wonderful (winter strain) is recommended.

Potatoes

Seed for the early crop should be carefully watched for the development of weak, spindly shoots. Payable crops cannot be obtained from seed which has been neglected, and from which the earliest shoots must be removed before planting takes place. According to variety, shoots will vary in colour from creamy-white to dark purple; but the ideal shoots are short, firm, and indicative of virility in growth. This condition can only be produced when the seed is properly boxed and cared for, as previously recommended.

Potatoes—stored

These should be periodically examined for damage, particularly from the ravages of the potato tuber-moth. Instances have recently been reported of serious damage to stored potatoes through infestation of this pest. Where a few hundredweights, or less, are stored, and the tuber-moth is known or suspected to be present, burnt or hydrated lime thrown among the potatoes so that it may have a chance of resting on the "eyes" of the tubers will assist in preventing attacks on uninfested specimens.

Hot-Beds for Raising Seedlings

STABLE manure is invariably utilised as the heating agent when seedlings are grown on a hot-bed. The bed can either be made up on the surface or in a shallow pit excavated for the purpose. If a pit is dug the diagram will illustrate the hot-bed when completed.

The structure above soil level should not be more than 5 ft. 11 in. wide, outside measurement. This will permit a "light" 6 ft. long to rest with an inch overlap for draining storm water. Sound inch timber should be used and 4 in. x 2 in. posts for stability. The height of the frame at back and front should be 12 in. and 6 in. respectively. This difference in height will provide a quick run-off for storm water.

The stable manure may be placed in the pit in cone-shaped heaps. This will be convenient for turning, prevent the manure from being blown about, and will protect the sides from becoming "fire-fanged" through escaping heat and exposure.

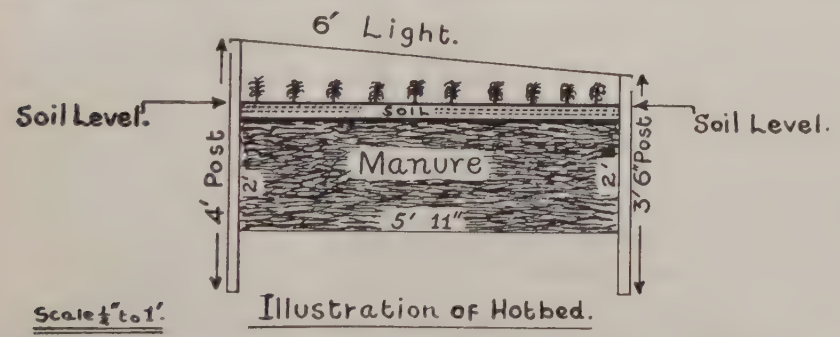


Illustration of Hotbed.

Fresh manure should not be forked over until it has been stored for three or four days. If no steam is seen to rise from it on a cool morning some water should be hosed on top, but not soaked. After the third turning the manure should be spread to the required depth, trodden down firmly and the lights placed in position. Frequent test should be made to determine the temperature, which may rise to 115 deg.-120 deg. F. At this temperature the manure should again be trodden firm, then covered with six inches of soil which has been sieved to remove lumps. As soon as the temperature has reached 90 deg. F. seed may be sown. At 75 deg. F. plants may be pricked out into the bed. Testing by a thermometer is the only reliable method of ascertaining the correct temperature. Guessing may be responsible for the loss of a whole seed-bed, or for the destruction of a bed of seedlings.

—D. K. PRITCHARD, Instructor in Vegetable Culture, Wellington.

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Internal Parasites

The annual mortality amongst hoggets from internal parasites is increasing from year to year, and on some properties is assuming enormous proportions. Similarly, losses amongst calves are proportionately high. Important information on this problem is available in the Department's free bulletin "Internal Parasites of Sheep and Calves, and Their Treatment."

Seasonal Work for Beekeepers

Enemies of Bees

THE principal insect enemies of bees in New Zealand are wax moths, of which there are two species, the greater wax moth (*Galleria mellonella*), and the lesser moth *Achroia grissella*). If allowed access to stored honey combs they become very destructive, and will also attack any unprotected combs of weak colonies standing in the apiary.

These moths are of Oriental origin, and are now found in almost every country of the world. The greater moth (*Galleria melonella*) is the more destructive, and was first reported in the Taranaki district in 1904. This moth has gradually spread over the whole of the North Island, thriving particularly well in northern areas. The normal female adults are approximately five-eights of an inch in length with a wing expanse of 1¼ inches while the lesser wax moth is about half that size. Both species lay their eggs and fly at night. They shun the daylight and rest during the daytime, and are not attracted by artificial light at night.

Nailum and Geuther observed that the female of the greater moth prefers to lay her eggs in the tiniest cracks and crevices of the hive supers. In warm weather the eggs may be hatched over a prolonged period, which means that the tiny larvae may be constantly entering the hives through unsealed crevices.

Wax moth larvae are able to digest beeswax yet they require a mixed diet. They definitely do not thrive and grow to normal size on combs free from pollen and the remains of brood rearing, while comb foundation remains almost untouched by them.

Soon after hatching the larvae start building individual tunnels of silk thread smeared with excreta and particles of comb in which they live, eating their way forward. When feeding ceases the tunnels are extended beyond the food mass and at the point of pupation a tight case is constructed. The lesser moth larvae tend to have their own individual tunnels, while the greater wax moth larvae congregate.

Control Methods

Colonies of bees kept in normal condition can deal quite effectively with the intruders. They should be assisted by the beekeeper, however, by keeping the floor boards of each hive clean and free from refuse. Where a colony is diseased or becomes hopelessly queenless, and is left any length of time, it will fall a prey to wax moth. Unprotected stored bee combs provide natural feeding grounds for these moths. All combs not in use on the hives should be placed in a moth-proof room which can be conveniently fumigated at intervals, or stacked in supers, closed top and bottom, in a dry open shed, in a manner that will allow suitable fumigation with calcium cyanide at regular intervals.

Owing to the feeding habits of the wax moths, it is a distinct advantage to sort and store bee combs in three classes,—

1. **Clean, new combs, no brood rearing and no pollen.**
2. **Empty combs, no pollen and little brood rearing.**
3. **All dark combs containing pollen and the remains of brood rearing.**

All combs should be spaced as wide apart as possible in the super, and not more than eight or nine to the super.

If only a small room is available and it is desired to fumigate infected combs in batches before or after storage, the supers containing the combs may be placed criss-cross in tiers and a quantity of calcium cyanide, about 4 lb. to 1,000 cubic feet space, placed on the floor about the room on sheets of paper. Expose at least 12 hours, and repeat fumigation in three weeks.

For best results the temperature in the space to be fumigated should not be below 65° F., and under dry conditions (relative humidity 30% or less) damp newspapers or sacks should be hung on the walls or ceiling to increase humidity and speed up the production of gas.

Apart from his bees, the beekeeper's most valuable asset is the extracting combs, and special care must be taken to protect them from rats, mice, mould, and wax moths at all times when they are off the hives.

—T. S. WINTER, Senior Apiary Instructor, Wellington.

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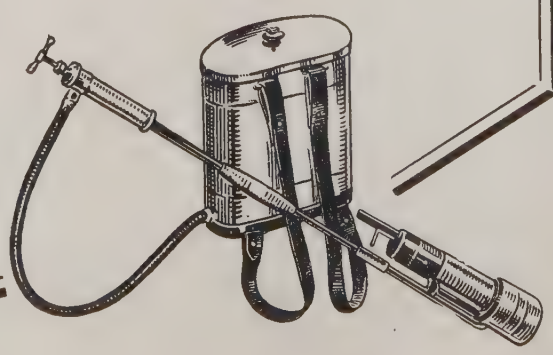

Notes for the Poultry Farmer

The Principles and Practice of Incubation

By F. C. BOBBY,
Superintendent of Poultry Husbandry,
Wellington.

MANY poultry-keepers throughout the Dominion will now be starting incubation operations. Under normal conditions hatching starts in July and continues until early October, but with the call for increased egg production, which of necessity means an increase in the number of birds required to be reared this year, many incubators are being started up at least two weeks earlier than is usual.

Although natural hatching by the hen cannot be improved upon, modern poultry-keeping demands the use of artificial methods. The latter have been brought up to such a high standard of efficiency that in actual results over a number of eggs there is little difference in the results optained as between natural and artificial hatching, always provided the poultry-keeper concerned has a thorough practical understanding of artificial methods and of the incubators being used. The labour involved and the difficulty of obtaining a regular supply of broody hens at the times required have caused the modern commercial poultry-keeper to turn almost exclusively to artificial incubation, but for the benefit of the smaller poultry-keepers reference will be made to natural methods later in this series of articles on incubation.

Artificial Hatching

For successful hatching it is essential that the fertile egg shall be maintained consistently for the required hatching period under conditions which are suitable for the development of the live embryo in the egg. The embryo is extremely delicate and cannot successfully withstand sudden undesirable changes; hence the necessity for the utmost care in maintaining these desired optimum conditions. There are four main factors which influence hatching, namely:—

(a) **Temperature.** This is a factor of importance since a normal chick embryo is only able to grow or develop within certain narrow limits of temperature. Any marked rise above or fall below the optimum temperature may have detrimental effects upon the subsequent hatching results, although this will depend to some extent upon the time during the hatching period at which such a rise or fall in temperature takes place. It is sufficient to state that an endeavour should be made to maintain the temperature at the level stated to be the optimum for the incubator being operated and the class of egg (i.e. hen or duck) used. It should be noted that the optimum temperatures vary for the several types of incubators in use today. Cabinet machines, where the temperature of the egg is similar both top and bottom, usually run at approximately 100°F., whereas table-top machines may be maintained at around 103°F. In the latter case there is a marked difference between the temperatures at the top and the bottom of the eggs, as is also the case under natural conditions. On an average, eggs under a hen are approximately 102°F. at the top and vary from 85°F. to 92°F. at the bottom (underside) of the egg, according to the period of incubation.

While care should be taken in the matter of temperature, exact temperature regulation within certain limits is not so important as popularly supposed. Should a consistently high temperature be maintained there is a definite likelihood of an earlier hatch —possibly the 19th day in the case of hen eggs, while there is invariably an increase in the number of abnormal chicks hatched, such as cripples with deformed toes, etc. Furthermore, following high temperatures in incubators a falling-off in hatchability of fertile eggs must be expected. Where the temperature is allowed to run consistently low, the embryo development is slowed down and a late hatch must be expected, accompanied by an additional number of cripples and a lowered hatch of fertile eggs. The results referred to above may be expected if the incubator is allowed to run consistently at three degrees or more above and below the optimum range of temperature for the machine in question.

(b) **Air Supply (ventilation).** The embryo developing within an egg, like all other living things, requires oxygen, while at the same time giving off carbon dioxide gas. As would be expected, the amount of oxygen required, and the carbon dioxide given off increase as the incubation period progresses. A lack of oxygen will decrease hatchability as may often be seen in table-top machines where proper ventilation is not achieved, particularly during hot weather. Many poultry-keepers have obtained improved results in table-top machines by cooling the eggs for increasing periods daily as the hatch progresses. It is reasonable to believe that this cooling practice improves hatchability, not owing to the actual cooling off of the eggs, but as the result of allowing additional oxygen to reach the eggs during the cooling period, and as the result of extra air passing into the incubator, which is opened at this time.

Closely associated with inadequate ventilation, which fails to provide sufficient oxygen, is the problem of a harmful excess of carbon dioxide in the machine. The production of carbon dioxide increases as the hatch progresses, and it is therefore necessary, in many types of machines, to increase the ventilation accordingly. A high temperature, together with an excess of carbon dioxide has been shown to cause a marked decrease in hatchability.

(c) **Humidity.** It is common knowledge among poultry-keepers that the

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air-cells of eggs increase in size during incubation. This is caused by a loss of moisture which under artificial hatching conditions must be controlled. If the eggs are maintained in a hot dry atmosphere in an incubator, the loss of water from the eggs will be excessive, resulting in poor hatches and small chicks. In order to avoid this extreme lack of moisture in the air of an incubator, special devices which vary with different machines are provided for maintaining a satisfactory humidity. It will be readily appreciated that climatic conditions exert a big influence upon this problem, since a far greater moisture content is found in the air of districts adjacent to the sea or fresh-water lakes as against the air of high inland areas. Such facts as these have to be taken into account when operating an incubator.

In general, little moisture is required at the beginning of incubation, a moderate amount thereafter until the actual hatching time, when it is required in excess. The method of gauging the amount of moisture required will be discussed in a subsequent article on the practical management of an incubator.

The main principles of incubation have been described, and their application in practice will follow, but it should be clearly understood that it is not possible to lay down hard and fast rules by which poultry-keepers may be guided, irrespective of the conditions under which they are working and the type of incubator involved. General advice is possible, but incubation is a practice in poultry-keeping where experience must be gained in every individual case having regard to the climatic and other conditions under which the poultry-keeper is working. It is a subject upon which it is most dangerous to be dogmatic.

(To be continued.)

A Warning to Poultry-keepers

ANXIETY exists regarding the supplies of electrical power during the winter months throughout the North Island. The Department of Agriculture has received a warning from the Public Works Department that, unless the utmost care is taken to conserve electricity during this winter by all sections of the public, it may be necessary to cut off supplies in certain districts for short periods, principally between the hours of 4 and 6 p.m. Whenever possible, warning of a power cut will be given, and poultry-keepers are strongly advised to take all practical precautions for such an emergency during June, July and August.

Poultry-keepers will realise that the greatest danger will be with young chicks, and precautions, including the ready availability of storm lamps, chick boxes, etc., should be given serious consideration. It is hoped that drastic action will not be necessary but there is a real necessity for the warning given.

Government Grants To Agricultural Colleges

POULTRY-KEEPERS will learn with interest that the Government has made a grant of £5,000 to Massey Agricultural College for the expansion of their present poultry department. Canterbury Agricultural College has been granted £6,000 to establish a poultry plant, since this College has no separate department for poultry husbandry at the present time.

The Government has requested that these grants be used immediately for the purpose of increased egg production, while keeping in view a long-term policy for the ultimate benefit of the poultry industry after the war. The authorities at both Colleges have agreed to co-operate with the Department of Agriculture to offer the industry full facilities for an educational and research programme as soon as post-war conditions permit. Although the time available for building purposes between now and the rearing season is all too short, Massey College is endeavouring to increase their laying flock by a minimum of a thousand birds, while offering a greatly increased number of pullets for sale to poultry-keepers with limited or no rearing facilities. Canterbury College anticipates, as an initial step for the coming season, the establishment of a flock of a thousand laying birds.

In keeping with the Government's endeavour to aid increased production, a limited expansion of the Poultry Station at Wallaceville has already been started, the main object of which is to provide small poultry-keepers with pullets for next laying season. If circumstances permit, extra capacity for laying pullets will be added to the present plant.

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Federation of Young Farmers' Clubs

Annual Meeting of Wellington Y.F.C. Council

THE annual meeting of the Wellington Y.F.C. Council was held at Palmerston North on Tuesday, May 18. Those present were Messrs. S. G. Avery (chairman); C. J. Craig, B. J. Collerton (Wanganui district committee delegates); B. M. Bary, H. B. Ellingham, J. L. Sunderland (Southern Hawkes Bay delegates); Sgt. J. L. Carey, Macgregor Donald (Manawatu district committee delegates); W. J. Buick (Wairarapa delegate). Messrs. D. S. Ross (Dominion President) and S. Freeman (Dominion Organising Secretary) were present by invitation. Apologies were received from Messrs. W. F. McLaren, N. Blatchford, H. McKenzie (Wairarapa), A. C. Buist, E. Beazer (Manawatu), N. Tilley (Central Hawkes Bay), and W. H. Benson (Wanganui).

Chairman's Report

The chairman's annual report struck quite an optimistic note. He referred to the fact that prior to the outbreak of war there were 81 clubs active within the Wellington Council area, while today there were only 18. At the beginning of the year under review, however, there had been only 19, and he considered that the retrograde process had been arrested. He mentioned the club recently formed in a military camp at Palmerston North (the Taranaki Regiment club), and the possibility of further clubs being formed in camps within the Council area. There appeared also to be definite prospects of a number of clubs being inaugurated in the High schools and Secondary schools along the lines of those successfully operating in other districts. He considered it very apparent that those clubs that had so far survived were determined to make every effort to carry on.

He stressed the value and importance of the district committees as the link between the clubs and the Council, and the need for them to hold, as far as possible, regular meetings in order to stimulate and foster club activities. He referred to the recent visit of the Dominion President and the Organising Secretary, who accompanied him and another member of the Council on a tour of some of the Council districts, meeting district committees and contacting members; this had done a great deal to revive interest at a critical period. The attendance of both the Dominion President and the Organising Secretary at the three Council meetings held during the year had also proved of great value. The success attained by the Masterton, Dannevirke and Taihape clubs by the enrolment of High school pupils as members was an example that could be well copied by clubs in other districts The series of broadcast talks prepared and given over Station 2ZA Palmerston North by Mr. W. J. Croucher, entitled "Farming Through the Years," was referred to in grateful terms; Mr. Croucher's efforts were considered to be a very valuable contribution to the Y.F.C. movement. In appealing to club officials and members generally, the chairman, in his report, reminded them of the value of publicity, and urged them to honour their promise to their fellow members overseas; he stressed the potential value of the Y.F.C. movement in post-war planning and its worth to the future generation of youth in the farming community.

The financial statement was presented, showing a credit balance at bank and in savings bonds of £426 16s. 9d.

Election of Officers

The election of officers for the ensuing year resulted in the following: Chairman, Mr. S. G. Avery; vice-chairman, Mr. B. J. Collerton; co-opted members, Messrs. W. F. McLaren, L. Feierabend, S. J. Avery, Col. Murray, A. J. Galpin; delegates to Dominion Executive Committee, Mr. B. J. Collerton, Sgt. J. L. Carey (active members) and Mr. W. F. McLaren (advisory member); substitute delegates, Col. Murray and Mr. L. Feierabend (advisory), Messrs. C. J. Craig and M. Donald (active).

Remits

The following remits, for consideration by the Dominion Executive Committee, were carried: "That when valuable members of District Committees and/or Councils are transferred to other areas, these bodies should notify District Committees and/or Councils in the areas in which these members are now resident, in order that their services may not be lost to the movement"; "That as much as possible be done to encourage and foster Young Farmers' clubs in Army and Air Force camps on a Dominion-wide basis"; "That every effort be made by the Y.F.C. organisation to foster the interests of returned men who desire to take up farming."

Future Aims

In an address to the meeting the Dominion President, Mr. Ross, brought

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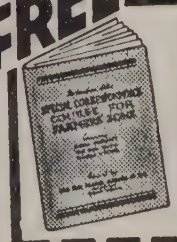

The Farm Accounting Association of N.Z. (Inc.), P.O. Box 693, Dunedin.

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NAME .....

ADDRESS .....

..... J.A.

out some very cogent points. He suggested that the future of the Y.F.C. movement depended, to a large extent, on its policy; in view of the large proportion of lads between the ages of 14 and 18 years who at present made up the membership, the policy should be framed on such lines as to definitely include junior, as well as senior interests and activities. He also considered that a certain amount of attention should be given, even at this stage, to the matter of reviving some of the clubs at present in recess. He instanced the tour of various districts mentioned in the chairman's report, and stressed that contacts made in this manner by Y.F.C. officials would have a marked effect in stimulating attendance and interest. He drew attention to the annual general meeting of the Federation, to be held in Palmerston North on July 1, and expressed the hope that every support would be forthcoming from members throughout the Wellington Council area; the attendance of local members at the annual general meeting would be deeply appreciated by delegates from other parts of the Dominion, many of whom would be making personal sacrifices in order to be present to represent their particular units. He deplored the lack of responsibility that had in many instances spelled the lapse of clubs and district committees; in his opinion the more that members put into the movement, the more they would receive from it. He, personally, felt that the organisation had a definite responsibility to its members overseas, and also to the younger generation, who were the farmers of the future. His own endeavour had been, and would still be, to place the movement in a sound position, and he appealed to all members of the organisation to assist; he agreed with the chairman that the view ahead looked considerably brighter, and wished the Council every success in its endeavours during the coming year.

The matter of attending to arrangements in connection with the entertainment and acommodation for visiting delegates on the occasion of the annual general meeting of the Federation was left in the hands of the chairman, Mr. Avery, and the organising secretary, Mr. Freeman, who was for the time being acting as secretary to the council. The meeting closed with a vote of thanks to the chair.

Young Farmers' Club in Military Camp at Palmerston North

A YOUNG Farmers' club was formed at Awatapu Military Camp, Palmerston North, in April last, and the initial membership of 17 has now grown to over 50. The club is known as the Taranaki Regiment Young Farmers' club and its "roll" contains the names of quite a number of members from clubs in Taranaki at present in recess. The following are the club officials: advisory president, Colonel T. T. Murray; club chairman, Sgt. B. M. Martin; club secretary, Cpl. J. L. Carey. Reports of two successful meetings and one interesting field day have already been received.

Lectures

At one meeting an informative lecture was given by Mr. E. Bruce Levy, Director of the Grasslands Division, on the subject of "Pastures." Mr. Levy dealt specifically with the effects of climatic conditions on pasture growth, and the varied methods of pasture management suited to different localities; he held the attention of his audience with the aid of lantern slides from photos taken in countries where extremes of heat and cold have to be coped with. Many questions were asked, and some interesting points brought out. Mr. Levy offered to deliver further lectures dealing with other aspects of pasture-management, which would include the composition of pastures, the laying down and grazing of grasslands, and the different types of grass-seed mixtures used; all the subjects were set down in a "study-course" pamphlet which he had prepared for the Army Education and Welfare Service.

Impromptu Talks

At the other meeting impromptu talks were given by practically every member present. Subjects of varied interest were written on papers and drawn from a hat, each member having to speak for two minutes on the particular subject that he had drawn. The speakers included Sgt. S. E. Barnett, Cpls. K. Wilson and C. A. Murray, and Ptes. D. Cooper, J. D. Ryan, J. R. Gordon, F. Sattler, E. W. Lucas, J. R. Sulzberger, H. C. Stockman, A. C. Bennett, S. P. Laing, S. Maxwell, S. J. Leigh, D. M. Atkinson, A. R. Brown, B. Donald, R. B. Hughes and N. H. Mitchinson. All members acquitted themselves surprisingly well, several giving talks of particular merit. At the conclusion of both of these meetings supper was partaken of in the Church Army Hut.

The field day was held at Massey Agricultural College, with an attendance of over thirty; the demonstrations included footrot and manurial trials (Mr. Hewitt), and visits to the Dairy Research Block and Piggery (Dr. Campbell).

It is understood that every assistance is being given and every facility granted by the military authorities, and by the A.E.W.S., to ensure the successful running of the club, and it is to be hoped that its formation and progress will set the example and prove it to be the forerunner of other similar clubs in military camps throughout the Dominion. The operating of such clubs will provide a long-sought link between the Y.F.C. organisation and many club members in the military forces, and will serve to interest men who may not otherwise have come in contact with the movement. The activities of the club generally can be expected to influence quite a number in the direction of farming as a post-war occupation.

British Farm Clubs

THE following recently appeared in the British Official Wireless news, and should be of interest to Y.F.C. members in New Zealand:

"Britain's first agricultural club for farmers and farm-workers has been formed in Norfolk. Its objects are to encourage first-class farming methods and increase efficiency, to obtain a better standard of living for the workers, and to encourage the younger generation to take an interest in agriculture."

The above is all the more interesting when it is realised that the age-limit for members of Young Farmers' Clubs in Great Britain is round about eighteen years, apparently no provision being made for older members except as advisory members or "leaders" (i.e., instructors). The farm club is definitely a new departure, and is evidently more along the lines of our own organisation. It is particularly striking to hear of clubs of this nature being formed in England in war-time, when we are experiencing difficulty in holding existing clubs in New Zealand.

Annual General Meeting of Federation

ALL members are requested to note that the annual general meeting of the Federation will be held this year at Palmerston North on Thursday, July 1, commencing at 10 a.m. A short meeting of the Dominion Executive Committee will be held at 9 a.m.

The actual place of meeting has not at time of going to press been decided upon, but any member who is in Palmerston North on that date, and wishes to attend, may obtain the necessary information by telephoning or calling at the office of the Department of Agriculture, Commercial Buildings, The Square. Delegates and Council members will have received the notices of meeting by the time this is published.

While voting on any matter is confined to the officers of the Federation and members of the four Councils (Otago-Southland, Canterbury, Wellington and Auckland), it should be definitely understood that all Y.F.C. members, active and advisory, are welcome and entitled to attend the annual general meeting and to take part freely in discussion. Members, particularly from clubs adjacent to Palmerston North, should avail themselves of the opportunity to meet delegates from other parts of the Dominion. In the afternoon prior to the meeting, and during the morning after, it is intended to arrange something that will be of interest to all delegates; visits to the Plant Research Station, Massey Agricultural College, and the Seed Testing Station are under consideration. It is hoped that the attendance will be a representative one, as matters of importance in connection with Y.F.C. affairs and policy are to be discussed at the meeting.

Intending visitors who may desire accommodation arrangements to be made for them in Palmerston North should communicate as early as possible with the Dominion Organising Secretary, Flock House, Bulls.

Cambridge Y.F.C. Revived

THE Cambridge Y.F.C., which went into recess last year, recently held its annual meeting, and decided to go on the active list again. The meetings are to be held at intervals of six weeks, instead of monthly, and every endeavour is to be made to recruit new members. The officers elected for the coming year were: advisory president, Mr. A. R. Gascoigne; advisory members, Messrs. G. A. Walsh and F. Turkington; club chairman, G. Goodwin; secretary, G. C. Herbert; treasurer, E. Searle; committee, D. Watt, L. Cunningham, W. Searle, P. Hyde, A. Feisst, H. Todd and R. Giles; delegates to district committee, Mr. A. R. Gascoigne (advisory), G. Goodwin and G. C. Herbert (active); dance committee, G. Goodwin, G. C. Herbert, E. Searle, A. Feisst and D. Watt. A vote of thanks was extended to the retiring chairman, A. Feisst. Arrangements were made for a dance in the Town Hall at an early date. It is understood that a definite canvas is to be made with the idea of enrolling younger members.

Correspondence with Y.F.C. Headquarters

CLUB Secretaries and others are again reminded that the Dominion Organising Secretary is at present stationed at Flock House.

In districts where an officer of the Fields Division of the Department of Agriculture is still acting as District Y.F.C. Secretary, reports of meetings, field days, etc., should be sent through him, **in duplicate,** so that he may retain a copy for reference. In some districts, owing to war conditions, there may be no officer available, and under these circumstances reports should be posted direct to **Mr. S. Freeman, Organising Secretary, Young Farmers' Clubs, Flock House, Bulls.** Latterly some club secretaries have been addressing reports of meetings, etc., to Wellington, thus necessitating re-addressing and consequent delay. Reports should be in the hands of the Organising Secretary by the 10th of each month for inclusion in the following month's issue of the Journal. Club secretaries are urged to forward reports as soon as possible after each meeting to avoid delayed publication.

Accounts, orders, payments for affiliating fees, Journal subscriptions, etc., should be addressed to the **Organising Secretary, Young Farmers' Clubs, Department of Agriculture, P.O. Box 3004, Wellington, C.1.,** as they are dealt with in that office. If they are addressed to Flock House, delay is again occasioned.

Club officials generally are requested to see that reports of all activities are forwarded to the Organising Secretary at Flock House; these reports are published in order to help and encourage other clubs, and to give publicity to the Y.F.C. movement. Your meeting or field day is not merely of value to your club and its members alone; it is of particular importance and interest to all units of the organisation.

Radio Broadcasts

THE following is the programme of Y.F.C. broadcasts to be delivered from Station 1YA, Auckland:—

June 28, 7.15 p.m.—Eastern Bay of Plenty District Committee.

July 26, 7.15 p.m.—Western Bay of Plenty District Committee.

August 23, 7.15 p.m.—Organising Secretary, Mr. S. Freeman.

September 27, 7.15 p.m.—Auckland District Committee.

October 25, 7.15 p.m.—Auckland Council Secretary, Mr. E. B. Glanville.

Annual Meeting

Mid-Canterbury District Committee

THE annual meeting of the Mid-Canterbury Y.F.C. District Committee was held at Ashburton on May 7. Members present were Messrs. E. Rhodes (vice-chairman) in the chair, J. Lowery, S. H. Hill, A. Davison, R. Wightman, S. Watson, A. McKenzie, A. McKay and R. Inch (district secretary). Apologies were received from Messrs. H. L. Chisnall, H. G. M. Watson, J. R. Fleming, J. Watson and R. J. Low. The chairman reported on the year's work and Mr. Wightman reported on the last meeting of the Canterbury Council. Arrangements were made for an inter-club debate for the Rotary Cup. Officers were elected as follows: chairman, Mr. E. Rhodes; vice-chairman, Mr. R. Wightman; secretary, Mr. Inch; auditor, Mr. W. H. Amos; co-opted members, Messrs. H. L. Chisnall, R. M. McGregor, D. Cochrane, J. Lowery, J. R. Fleming, S. H. Hill; delegates to Canterbury Council, Messrs. E. Rhodes, S. Watson and R. Wightman. The sympathies of the members were extended to Mr. H. L. Chisnall in his illness, with hopes for his speedy recovery.

Reports on Club Activities

WESTERN SOUTHLAND.

Orepuki.—Annual meeting. Officers elected: Advisory president, Mr. H. J. Townshend; club chairman, D. McPherson; secretary, Harold S. Young. There was an attendance of 23 members out of a total of 27; in addition there are 13 members in the services.

Woodlands.—Annual meeting. Officers elected: Advisory president, Mr. G. Stevenson; chairman, A. S. Trotter; secretary, K. Maxwell; treasurer, L. Middlemiss; committee, club officials, with addition of H. McKenzie and A. Campbell. Delegates to district meetings, Mr. J. Middlemiss (senior), A. S. Trotter, K. J. Hargest (active).

Wyndham.—Annual meeting. Election of officers. Talks by Messrs. Harris and Middlemiss on Y.F.C. activities.

NORTH OTAGO.

Enfield.—Annual meeting. Officers elected: Advisory president, Mr. F. Mulligan; chairman, K. Gibson; secretary, J. Buick; treasurer, W. Stewart; auditor, W. Stewart; committee, club officials, with addition of J. Stanger and J. Frew; delegate to district meetings, Mr. W. Malcolm (senior), R. McLea and J. Adams (active). There were 11 members present.

SOUTH CANTERBURY.

Geraldine.—Annual meeting. Officers elected: Advisory presidents, Messrs. W. S. Crotty and J. Little; chairman, K. Hibbs; vice-chairmen, A. Neutze and P. Temple; secretary, A. Crotty; treasurer, T. Greenall; auditor, Mr. Bean; committee, club officials, with addition of C. Kelman.

MID-CANTERBURY.

Ashburton.—Annual meeting. Officers elected Patron, Captain C. C. Werry; advisory members, Messrs. H. C. M. Watson, A. Bennett, W. H. Vaughan; chairman, H. Bennett; secretary, S. Watson; treasurer, B. Lambie; committee, club officials, with addition of L. Dunlop, B. Cornelius, A. Jaine, K. Latimer; auditor, Mr. J. M. Willoughby; delegates to district meetings, H. Bennett, S. Watson; delegates to Farmers' Union meetings, two members each meeting; social committee, S. Watson, H. Bennett, A. Jaine. There was an attendance of 26 members. At the following month's meeting a discussion took place on scrap metal; the club decided to assist the Women's Institute and the W.D.F.U. in the collection of their various areas. Arrangements for a trip to the local flour mill. Lecture by Mr. G. K. McPherson, Department of Agriculture, on "Linen Flax"; the speaker described the plant, its growth, suitable soil types, etc., and dealt with the cultivation, harvesting and processing, etc. There was an attendance of 20 members.

Hinds. — Annual meeting. Officers elected: Advisory president, Mr. H. L. Chisnall; chairman, A. McKenzie; secretary, A. Davison; treasurer, R. Watson; committee, club officials, with addition of W. Taylor, E. Rhodes, D. Chisnall, W. Keely; delegates to district meetings, Mr. L. Chisnall, A. Mackenzie, A. Davison (junior).

Methven.—Cups and certificates to be presented at annual ball. The chairman, R. Wightman, gave a report on the recent Canterbury Council meeting, and the Dominion Executive Committee held at Christchurch. Mr. R. Inch, Department of Agriculture, displayed a comprehensive collection of farm weeds and seeds; these were named by members, after which Mr. Inch supplied the correct names in each case and gave a very interesting talk. Mr. Helps delivered an instructive lecture on "The Linen Flax Industry." There was an attendance of 23 members at the meeting. A successful field day was held on Mr. R. J. Low's property, a feature being two stock-judging competitions with Southdown and English Leicester sheep. The club cup, for the most points in judging, was won by J. Oldfield, who was the winner of both classes. The party was taken around the farm by Mr. Low, who pointed out and described many interesting matters, including various crops and pastures. There was an attendance of 33 at the field day, including 22 members and 9 high school boys.

CHRISTCHURCH.

Darfield.—Annual meeting. Officers elected: Advisory president, Mr. R. S. Gunn; chairman, C. Stott; secretary and treasurer, G. H. Eaves; committee, club officials with the addition of J. Dundas, A. McLachlan and F. Jarman; delegates to district meetings, Mr. J. Stewart (senior), C. Stott and G. H. Eaves (active).

Ellesmere.—Three new members enrolled. Final arrangements for annual dance. Talk on "Beekeeping" by Mr. T. F. Penrose. 22 members attended. At a meeting held on a later date an ordinary member took the chair for the evening; this was the first time this had been tried, and proved a success. It was decided that the profits from the annual dance would be spent on parcels for members overseas. Talk by Mr. R. G. Bishop on "Our Heritage and How We Value It." Mr. Bishop outlined the position in England in the early 19th century, and from that date he described the developing of New Zealand and elaborated on our duties to build on the foundations laid by our fathers. Seventeen members present.

NORTH CANTERBURY.

Scargill-Omihi. — Seed judging: members brought along samples of all farm seeds. The members judged same, and the senior members gave the final decisions. Senior members, Messrs. J. W. Earl and R. J. Black. There was an attendance of 22. Officers elected at the annual meeting, the previous month: Advisory presidents, Messrs. J. Sloss and W. H. Brown; chairman, E. G. Gibb; secretary and treasurer, J. M. McMillen; delegates to district meetings, T. G. Maxwell and E. G. Gibb.

NELSON.

Murchison.—Annual meeting held in April: Chairman, J. Horner; secretary and treasurer, C. Peacock. A number of new members enrolled, bringing membership up to 31. Successful dog trial run at Murchison, a number of outsiders competing. The trial was run under the name of the Murchison Young Farmers' Dog Club, affiliated with the Marlborough-Nelson Provincial Sheep Dog Trial Association, and was organised by a committee of Y.F.C. members.

MANAWATU.

Bunnythorpe.—Decided to write thanking the Women's Institute for allowing Y.F.C. members to compete at their recent show; club members as follows won classes at the show—G. Cooper (potatoes), P. Gunn (tomatoes), R. Clevely (carrots and parsnips). In connection with the club's potato competition, it was decided that the potatoes should be brought to a central point after proper sorting. Mr. Robson was thanked for making the usual presentation of a money-belt to G. McKenzie on the occasion of the latter's farewell. Club members to attend a field day to be held at the Manawatu Gorge Lime Co.'s works. Address by Mr. A. F. McKenzie on "The Manawatu Gorge Lime Co." At the meeting held a month later the results of the potato competition were announced, as follows: C. S. Anderson, 1st; R. E. Clevely, 2nd; G. Hooper, 3rd; O. James, 4th. Mr. H. de O. Chamberlain, Department of Agriculture, gave a talk on the competition generally. It was decided that the prizes be presented at a dance to be held at a later date. R. Clevely was selected to write up a report of the potato-growing competition for the Y.F.C. section of the "Journal." Three new members enrolled, and 19 were present.

Feilding.—At the last two meetings members attended the "open forum" held at the "Centre," the speakers on the two occasions being (1) Mr. H. C. D. Somerset, who discussed "The Beveridge Plan for Social Security in Great Britain" and compared it with the N.Z. plan. (2) Mr. L. J. Wild, who spoke on "The Future of Farming in New Zealand." At the annual meeting, despite the grave depletion of membership, the club decided to carry on with monthly meetings in order to maintain the club; at the conclusion of each meeting members would attend the "open forum" held at the Community Centre.

Rongotea.—Talk by Mr. J. P. Gloyn on "Artesian Springs, Geysers, etc." Officers elected at annual meeting: Advisory president, Mr. H. J. Lancaster; chairman, F. Crocker; secretary and treasurer, K. H. Noel; committee, club officials with addition of R. O. Gloyn, J. P. Gloyn, H. J. Vallender, A. Angus, M. Huddleston and J. Thompson; delegates to district meetings, F. Crocker, K. H. Noel and R. O. Gloyn.

WAIRARAPA.

Alfredton.—Final arrangements for dance. Report by W. Heckler on the annual district meeting held at Masterton. Thirteen members attended.

Carterton.—Talk by Mr. E. T. Bliss on "Some Economic Aspects of Carcase Conformation in Pigs." Attendance of thirteen members.

Masterton.—The monthly meeting was held in conjunction with the annual district meeting. This was attended by Messrs. D. S. Ross, Dominion President, and S. G. Avery, who both spoke on Y.F.C. affairs generally, dealing with some of the difficulties encountered and making suggestions for combating them. 25 members attended out of a total club membership of 32.

SOUTHERN HAWKES BAY.

Dannevirke. — Arrangements completed for wool-classing course to occupy next three meetings. Two-minute talk by W. Timbrick on "Mothering Lambs." The speaker for the evening was Capt. Rundle, from the C.D.S.I.,, who gave a very interesting talk, his subject being "The Hand at the Plough." 25 members present.

TE KUITI.

Otorohanga. — Report and discussion on annual ball. Decided to take part in radio talk for June. Arrangements concluded for an impromptu talk competition for a cup donated by Mr. D. V. Brightwell. There were 25 present out of a membership of 27.

Paewhenua.—Annual meeting. Presentation of second annual report. Officers elected: Advisory president, Mr. P. D. Crowley; chairman, K. Harnett; secretary, J. C. Petersen; treasurer, F. Thomas. Mr. McAdam to be asked to deliver an address. Annual dance to be held. There were 16 members present out of membership of 21. Six new members enrolled.

BAY OF PLENTY.

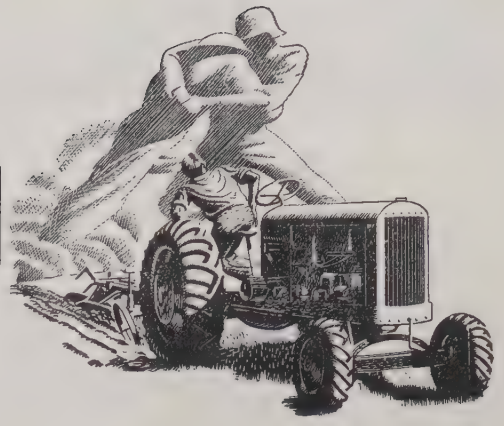
Paengaroa.—Annual meeting. Officers elected: Advisory president, Mr. J. B. Cawte; chairman, C. Riddell; secretary, J. B. Vant; treasurer, K. Conway; committee, D. S. Ross, I. Spratt, S. McDowell, H. Walker, B. Calder, J. Gulliver, M. Steel; delegates to district meetings, Mr. J. B. Cawte (senior), C. Riddell and B. Vant; press reporter, I. Spratt. Mr. J. B. Cawte gave a short address on the duties of the various officers of the club. Mr. D. Ross, Dominion President, also gave a short address, dealing with club activities during the past year; he was emphatic that the Y.F.C. movement could keep going in spite of wartime conditions and curtailment of activities. He urged all members to do their utmost to keep the movement on a sound footing for the "boys" when they returned from overseas. There were 29 members present at the meeting. At a previous meeting six members gave impromptu talks on the following subjects: wool-growing, dairy production, pasture management, present war topics, feeding Europe after the war, and ways to stimulate the Y.F.C. movement. 24 present.

Pukehina.—General discussion, the subject being "The Value of Harrowing Pastures; and different Types of Harrows." At the annual meeting the following officers were elected: Advisory president, Mr. S. Winters; chairman, S. Gibbons; secretary, J. F. Reid; treasurer, K. Shearer; delegates to district meetings, Mr. S. Winters (senior), S. Gibbons, J. F. Reid.

Te Puke.—Annual meeting. Officers elected: Advisory president, Mr. D. S. Ross (Y.F.C. Dominion President); chairman, D. R. Caldwell; secretary, E. Melton; treasurer, W. Bragg. Mr. Ross congratulatled the members on the way they had attended during such a difficult year, and urged each member to do his best for the club and the movement as a whole during the coming year.

Te Puna.—Arrangements for hay competition, Mr. E. Gibson to act as judge. Social evening

HE WENT FORTH



SEVENTH SERIES.

ARMY.

Name.	*Club.*
Anderson, J. A.	Feilding
Beazer, L.	Feilding
Bowen, W.	Bulls
Brewster, H. D.	Feilding
Brooks, F. E. M.	Ellesmere
Brown, A.§	Dannevirke
Capamagian, H. V.	Kati Kati
Cay, F. C.*	Wyndham
Cheetham, C.	Bunnythorpe
Cheetham, N.	Bunnythorpe
Cutler, S.	Feilding
Dittmer, A.	Bunnythorpe
Dunn, F.	Bulls
Frecklington, S.	Bulls
Gee, A.	Bunnythorpe
Gee, L.	Seddon
Gloyn, T. G.	Feilding
Gore, J.	Bunnythorpe
Grainger, C.	Kati Kati
Hazelwood, L.	Bulls
Heslop, W. M. J.	Ellesmere
Hill, A.‡	Bunnythorpe
Hooper-Smith, E.‡	Dannevirke
Johnston, C.	Dipton
Klatt, F.	Bulls
King, W.	Dipton
Last-Harris, S.	Bulls
Lemon, W. K.	Ellesmere
Lean, L. M.	Feilding
McKenzie, G.	Bunnythorpe
McKinnon, J.	Feilding
McKee, J.	Seddon
McLachlan, W. G.	Ellesmere
McNaughton, D.	Te Puke
Mansel, H. R.	Kati Kati
Merrett, R. E.	Feilding
Milligan, R. H.	Dipton
Mitchell, E.	Wyndham
Nichol, J. H.†	Feilding
O'Donnell, A.	Bunnythorpe
Peachey, A.	Bulls
Prichard, G.	Bulls
Ramsbotham, P.	Kati Kati
Ritchie, J.	Bulls
Russell, C. M.	Bulls
Simpson, R.	Bulls
Smith, A. G.	Bulls
Turner, D.	Dannevirke
Tweedy, D. N.	Ellesmere
Torrey, A.	Bulls
Volckman, R. L.	Geraldine
Wagner, B. K.	Ellesmere
Walford, R. F.	Kati Kati
Webber, H.	Bulls
Wilson, O.	Te Puke
York, B.	Bulls

AIR FORCE

Name.	*Club.*
Bright, J.	Seddon
Caldwell, B.	Te Puke
Casey, M.	Seddon
Dysart, R. S.	Seddon
Flemming, R.	Seddon
Gee, D. W.	Seddon
Hammond, T.	Seddon
Harris, C.	Bulls
Ingram, N.	Bulls
Jurgens, W.	Bulls
Jurgens, T.	Bulls
Kempton-Werohia‡	Te Puke
Kennington, B.	Seddon
McNaughton, R.	Te Puke
Maul, N.°	Bunnythorpe
Palmer, J.	Dipton
Quarril, J. T.	Bulls
Robertson, I.	Wyndham
Thomas, D. B.	Kati Kati
Thompson, C.	Seddon

NAVY

Name.	*Club.*
Durrant, R. W. (Fleet Air Arm)	Feilding
Hart, D. S.	Feilding

‡ Killed in aircraft accident.
§ Wounded.
* Killed in action.
‡ Prisoner of war.
† Missing, believed prisoner of war.
° Missing on air operations.

to be held. Seven-a-side football match to be arranged. Interesting and instructive talk by Mr. H O. Cooney, Solicitor, Tauranga, on "Law as it Applies to the Farmer."

Whakatane D.H.S.—Annual meeting. Officers elected: Advisory president, Mr. I. Hubbard; chairman, G. Torrie; secretary, G. B. Paterson; treasurer, M. Law; committee, P. Gow, J. Hansler, K. Crozier, A. Rice; delegates to district meetings, G. Torrie, G. Paterson and B. Bell.

NORTH AUCKLAND.

Kaukapakapa.—Annual meeting. Election of officers. Movement to form a club at Makarau. Eleven members present.

Aria Y.F. Club

ADVICE has been received from the district Y.F.C. secretary, Te Kuiti (Mr. K. M. Montgomery), of the following interesting details regarding the members of the Aria Y.F.C. which is at present in recess for the duration of the war. Of a pre-war membership of 34, there are 22 in the army, 5 in the airforce, and 1 in the navy; a total of 28 in the fighting services. Of these 3 have been killed in action, 5 wounded (one of them twice), and 1 is a prisoner of war in Germany. The remaining members are serving in the Home Guard. This is a record for any club to be proud of, and it is trusted that all of those still living will return safely, when it is certain that their club will be revived. The sympathy of all members will go out to the relatives of those who have made the supreme sacrifice.

Health Notes for the Farm

Is Your Home Safe?

Contributed by the
DEPARTMENT OF HEALTH

NEARLY one-third of all the accidents that happen in this workaday world happen in the home. That sounds almost incredible, but it's a sad fact proved conclusively by statistics.

Most of us look upon the home, with its atmosphere of comfort and friendly security, as the safest place in the world—as a place of escape from the pains, perils and uncertainties of the outdoors. Inside the four walls there is a feeling of restfulness and relaxation, and it would seem the last place where trouble would intrude its ugly head.

But it does with alarming frequency. The principal causes of accidents in the home are falls, burns and scalds, but knives, scissors and other sharp instruments, poisons, electricity, gas, and cleaning fluids all provide a constant source of risk, and the tragedy of it is that the victims are nearly always the toddlers—those inquisitive little people who must know all about everything.

In one of our New Zealand hospitals recently there were seven little tots who should have been home playing. They were very sick little children, and all were sick with the same thing—burns sustained in the safest place they know, their homes. Some will be crippled for life. One had pulled the flex of a hot water jug, and the boiling water had spilled over him; one had fallen into a bath of extremely hot water left unattended for a moment by the mother (another child recently died from a similar happening); another had clutched the bright red elements of an electric heater; and still another had tried to pull the pretty little red coals out of the fire.

They had all happened in a flash. These little mites had to suffer the agony because of the thoughtlessness and carelessness on the part of some one who should have known better.

Accidental Death

But the damage did not stop at terrible wounds and scars, many of them permanent and disfiguring. In 1940, for instance, sixty-seven children under five years of age in this country died accidental deaths, and thirty-five of them died from accidents in or just around the home. Heading the list were swallowed objects that had caused suffocation or punctured vital spots; the balance comprised deaths from burns, poisons, gases, falls and mishandling of or by machinery. These facts are pitiful, all the more pitiful when it is realised that all these tragedies could have been prevented by a little thought on someone's part.

The kitchen seems to be the main scene of accidents in the home, and burns usually a major cause. Handles of pots and pans should be turned out of the reach of curious little fingers; matches should be out of reach too; electric flex should be hung high; and open fires should be screened. Only recently one read of a small boy standing in his dressing gown in front of an open fire after his bath. The door suddenly opened, the draught blew his dressing gown on to the fire, and the unfortunate child was removed to the hospital badly burned. That's how simple it is.

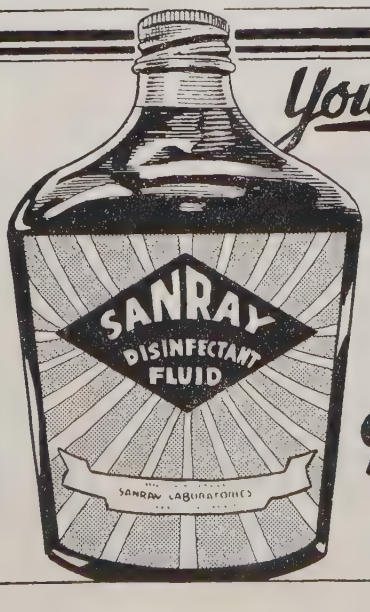
Scalding is another source of accidents—sometimes extremely painful and dreadfully disfiguring. Tablecloths clutched by an unsteady toddler frequently spill hot liquids over the little victim, and how often does a youngster suddenly step into its bath when the mother's back is turned? That bath might contain scalding hot water. It is an excellent plan to put the cold water in first, and then add the hot.

Parents' Responsibilities

Scissors with sharp points, knives, pins and so on should be well out of reach, and poisons and chemical preparations of all kinds should be in a special place.

One could keep on enumerating what to do and what not to do in order to prevent the appalling list of accidents in the home. It is the responsibility of parents to give some thought to the problem, and see that the risks are reduced to a minimum. Apart from anything else, the bitter penalties paid in so many unfortunate homes is surely a sufficient lesson.

There's a point worth noting in regard to lighting in the home. Adequate lighting will save many mishaps. It is false economy not to have a lamp in the dark corners of the home. Where there is darkness there are dirt and danger, for it is on the ill-lighted staircase or in the dim room or passageway that accidents occur and dust accumulates. Particularly in the kitchen should the lighting be ample.



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THE GOOD NEIGHBOUR.

From Me To You

SOME weeks ago I read an extremely interesting article in a magazine, which raised a point that intrigued me greatly. The article was entitled "Are you alive?" and how I enjoyed it! The main point made by the writer was whether we lived our lives to the full—in other words, did we live, or did we exist? This question was answered by the author in an illustration concerning his own life. He said he was an accountant by profession, and a poet in his spare time—when he was adding up columns of figures he existed, but when he wrote poetry he lived.

I don't altogether agree with his line of reasoning, for I think that many of us feel we are living to the full when we are occupied with our daily work, but then again, and although we may be enjoying our daily round, perhaps we still feel now and again we would rather be doing something else, something that would turn existence into living for us. Still, what is one man's meat is another man's poison, and it behoves us to be contented with our own lot, and so turn the days of our existence into days of rich living. It can be done—attack each job cheerfully, and even if you would rather be outside in the garden on one of those rare, sunny days in mid-winter, you will find that pile of dishes decreases more rapidly if you think to yourself, "Now hurry up—after the dishes are done, and the housework finished, I can get outside into the garden, and into the sunshine. That will be living on a day like this!"

The days go by. Some of us are glad when the day is done, and it is time to say good-night, for we feel it is yet another day nearer to victory, and to peace, and to all that day means to us. And yet, even in the midst of the saddest day, there comes a moment, however fleeting, that turns existence into living for just a brief space of time, and it is these moments that are given to us to treasure down the days, to illuminate the grey days of existence.

I think Earl Biglow Brown felt a little bit like me when he wrote this verse:

"I wonder that God can afford it—
Violets deep in the glen,
Seldom or never discovered
To eyes of adoring men.
I marvel that God is not thrifty,
Last night on the Tappen Zee,
And at three in the morning His moonlight
Was spilled, molten silver, for me.
I wonder that God is not saving,
Age after age He will give,
Lessons to stonehearted statesmen
That Love is the way to live."

I too have found moments like these that have turned the whole dull day into a thing of shining beauty—something so rich that the dullness has been cast out, and only the joy of the moment is left to remember in years to come.

Oh well, it is raining outside, and there is a cold wind blowing, but I must go out just the same. Why, what fun! I will be able to wear my new tartan raincoat that is so gay it will defy all the cold winds abroad, and although it is too windy for my scarlet umbrella, I will wear my pixy hood, and it will be fun outside just looking forward to coming back home to the glowing fire. I will remember that all the time I am out, and I won't be able to hurry home fast enough. And you—are you feeling the same as me about life when I ask myself the age-old question: "Is life worth living?" And of course you know the reply: "That depends on you!"

Mary

Winter Day

It's fine again now,
God sent rain today
To show how miracles are made.
The trees and grasses looked and listened,
The hills did likewise,
Only man put up his umbrella,
And grumbled, and grumbled.

Helpful Hannah Says . . .

A pinch of salt and a teaspoonful of sugar added to burnt milk before the milk gets cold will take away the burnt taste.

* * *

A handy soap-scraper can be made from a bottle-cap nailed to the end of a short piece of broomstick. It is easier and safer to handle than a knife, and makes finer shavings.

* * *

When flowers are scarce and greenery not so green, save carrot tops, cutting about half an inch of carrot. Remove all the outside leaves, place two or three tops in a bowl in about half an inch of water. By adding more water each day they remain sweet, and in a few weeks the bowl is full of green fernlike foliage.

When polishing your floors use newspaper. You use less polish this way, and the old newspaper makes excellent fire-lighters.

* * *

On washing day put your used starch into your used blue water, and use to do your scrubbing with. You will be surprised at how white your woodwork becomes.

* * *

To prevent fish from sticking to the pan dry them with a cloth before cooking.

* * *

When rinsing blankets, add a tablespoon of glycerine to the water. This keeps them soft and fluffy.

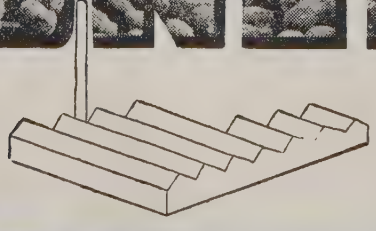
* * *

If the drain pipe of your sink gets blocked, it is usually possible to clear it by forcing a spring curtain rod down the pipe. As the rod is flexible, it can be forced round the bend of the pipe where the stoppage generally occurs.

WHEN *Peace* RIDES THE SKY

When to-day's bomber becomes to-morrow's luxury liner of the air, peace and plenty will return to the earth. Until then it is our civilian duty to do without. To-day the Onehunga Mills are weaving for war, for the men who deserve the best in rest and relaxation. If you cannot buy your full requirements of Onehunga blankets, remember that the day will surely come when they will return to active service in your home, to provide you once again with peaceful sleep.

ONEHUNGA



ONEHUNGA BLANKETS—AIR CELL BLANKETS — ONEHUNGA TRAVEL RUGS — ONEHUNGA WOOLLENS.

02

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The Attributes of Wise Parenthood

A SPLENDID competition, this one, with many helpful and really constructive ideas as a result. Some of you obviously had in mind the very small children, while others advised on the upbringing of teen-age youngsters. Every entry was first-class and judging was far from being an easy task, so close was the margin between first and last in order of merit. First prize goes to "Alix," of Wairoa, Hawkes Bay, and second prize to "Alter Ego," of Clinton, South Otago.

This bonny lass of today promises to be a wise parent herself tomorrow, and she seems to be staring very hard into that future, doesn't she?

First Prize:

"TRAIN up a child in the way he he should go, and when he is old he will not depart from it." So wrote Solomon nearly 3,000 years ago and wise parents throughout the ages have been proving the worth of his words. Wise parenthood does not merely mean the matter of feeding, clothing, educating and caring for children. It goes deeper than that. Wise parents begin their duties as soon as they realise that a little life is to be entrusted to their care by strict attention to diet, hygiene and exercise laying the foundation for a healthy body and good teeth. Then, after birth, by training straightaway, they found good habits, regular sleep, feeding, hygiene and self control. The ideal parent knows the value of dietetics and plan their children's meals so that the vitamin and caloric content of its food is well balanced and sufficient for sturdy health. The child so brought up rarely suffers from colds, decaying teeth or the usual epidemic sicknesses to which children brought up on a starchy ill-balanced diet are prone.

As the child grows to school age the duties of parenthood become even more pronounced, as amongst the mixed company he has to associate with even the most carefully brought up child has to see and hear harmful things from children whose parents care little about what their children say or do, and the filth that some children do utter is appalling. I well remember the horror on the face of my five-year-old when she rushed in and said that Susie (a three-year-old) had called her a D—— B—— B——. Children have to face this, and wise is the parent who early trains his child to make friends only with children whom his parents would care to have them play with.

The amusements of children must be carefully supervised. The parent who allows his child to visit picture shows indiscriminately is laying up trouble for himself by allowing the child to absorb false values of life and to gloat over crime and murder. Wise is the parent who only allows pictures as a treat when some eminently suitable film is showing. That parent too will be very careful to supervise his child's reading matter and thereby lay up a love for good books and the classics which will be of great joy in later life.

Then there is sex instruction. The wise parent answers truthfully the small child's questions about sex, even if the child is only three years old. What joy to have a clean-minded little chap who knows the truth of where he came from, and as he grows older how he will love to read and reread Edith Howes' "Cradle Ship." How different from the unfortunate child who culls his knowledge from doubtful sources and to whom sex is something to snigger about.

Time will not permit to speak of education and home discipline, but these every parent must face.

Having gone this far you may ask, "Have I done all I may for my child?" I answer "No, you are robbing him of his birthright if you are not giving him a religious training." Happy is the child who is born into a home (rare these days) where the family altar is daily raised, where he is familiarised with the word of God and knows the solace of prayer and the tender love of Him who said "Suffer little children to come unto Me."

It is no easy task being a wise parent. Is it worth while? you may ask. Those who have so trained will answer "Yes," proudly looking to their clean-living upright sons and daughters as the crown of long years of self-sacrifice and patience.

The world today is in a sorry plight, and it is to the men and women of tomorrow—the children of today—on whom the burden of future days will rest. Is it the children from the cocktail, gambling, pleasure-seeking homes that are going to help this weary world, or those from the homes where self-control, self-knowledge and reverence are the daily portion? —I ask you this.—**"Alix," Wairoa, H.B.**

Second Prize:

UNDOUBTEDLY the 20th century is the age of the child, and we who are parents have much to be thankful for in that we can spare the rod and know that by so doing we do not spoil the child. So that the first attribute of parents should be kindness first and cruelty last. We should try to give firm and just decisions, teaching the children to form their own judgments, to make a choice between right and wrong. We should ourselves be strictly truthful and then we can expect and actually obtain truth from them. How can we expect children to believe us if we tell them lies from the start, lies about Santa Claus, lies about babies, lies about grown-ups being better behaved than children?

It is not an easy job trying to be a wise parent because in addition to

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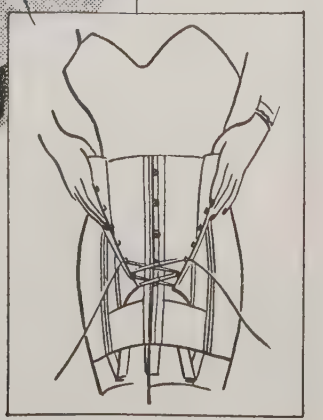

MODAIRE

Practical Front

being truthful in word and deed, we must be impartial and just and try to see the child's viewpoint, even while firmly believing our own is the right one. Remember a child is the most logical creature in the universe. We must teach our children to love the beautiful in life, to "look long at the stars and forget small things," to love the sun and flowers and good wholesome food and honest toil, and the beauty of rest after toil and of work well done. We must teach them the value of friendship and the glories of love and faithfulness and loyalty to an ideal or a cause. We must spend time with them, reading to them and singing and playing with them and showing interest in their small but so important affairs, and when the day comes for them to leave the nest and fly away to other homes let not our mother love become smother love, but let them choose for themselves, whether it be a career or a mate for life. Surely no job is more important today than the rearing of a family, for in addition to caring for the temple of the body, we should also build the temple of the soul.—**"Alter Ego," Clinton, Otago.**

Competitions

June:

Judging from the entries which I have received already, this month's competition promises to be a really good one. Remember the subject was the cheerful thought that makes your day seem brighter and happier? The world is in need of cheering these days, so send in your entry before July 15th.

July:

I wonder how many of you can recall moments in your life when you really wished the ground would open up and swallow you? I am sure that at some time or another every one of you has felt that way—I think my most embarrassing moment was one birthday when an old lady gave me a bottle of scent for a gift. In a generous gesture I asked for her hanky so that she could share my perfume, and imagine my horror when I found the bottle was quite empty! It was no use trying to wheedle even the tiniest whiff from the bottle—it was quite, quite empty. I wished then the ground would open up and swallow me! Let us share your "Awkward Moments."

Two prizes as usual: first 10/- and second 5/-, and let me have your entries before August 15th.

"MARY,"
C/o "Journal of Agriculture,"
P.O. Box 3004, Wellington.

THE foundation of parenthood is love. Love for one another and love for their children. "The boy is father to the man." How true that is. It behoves us then as parents to plan wisely for our young children and lead them from the start in the way they should go to make them fine men and women. Young children respond quickly to love and kindness and have confidence in those who are good to them. When they become old enough to understand, show them that you trust them, and parents must be true and straight in their dealings with a child. As a rule young children place their parents on a pedestal, and it is a great shock if they are let down. Go to church yourselves and take your children with you—so many send them alone, or not at all. They must have your example to follow. Allow them to ask friends home to play and you can then with a little diplomacy choose from among them the ones you would like for their friends. It is very wise to encourage your young people to be fond of reading, music (not radio), arts and crafts with which to fill up spare time without drudgery. Be interested in all their doings and never be too busy to listen to their confidences. In this way you keep yourself young and are treated by your child as a friend as well as a parent. Today there is very little home life enjoyed. There seems to be a growing tendency to spend every evening or spare time away to pictures or other entertainments, but those people who encourage the families to be more serious and responsible will find it well worth while. Let our object be to make our children good citizens, good neighbours and lasting friends.—**M.A.M., Southland.**

TAKING for granted that all parents have the most needed of all attributes, that of love, I should say that the next in importance is understanding and sympathy. These I am afraid are found more in mothers than in fathers, probably because the mother has more opportunities of studying her children. Each child if he is to be a happy useful citizen will need different treatment. A wise word to one will accomplish what will require a strapping for another. Next in importance I would place unselfishness or the ability to put the interests of the child before the interests of its parents. By this I do not mean spoiling the child, for a spoilt child often does have selfish parents, for they humour the child just for the sake of their own comfort at the moment. Next I should place self-control. How can we expect children to control their own passions if they see us flying into tempers or to deny themselves for others if we are continually seeking selfish pleasures and spending money on ourselves? Sincerity and comradeship come next. No one is quicker than a child to detect and despise insincerity in anyone. So be a sincere comrade to your children, but please at the same time do not try to run their lives for them. Last, but not least, I would place cheerfulness, which combined with a strong sense of humour will be found to be most helpful both to parents and child.

Finally, I would repeat what an old lady said to my husband when our first son was born. "Well, young man, if you wish your son to be a perfect man, all you have to do is to be one yourself." Sounds easy enough, eh?—**"Sleepy," Canterbury.**

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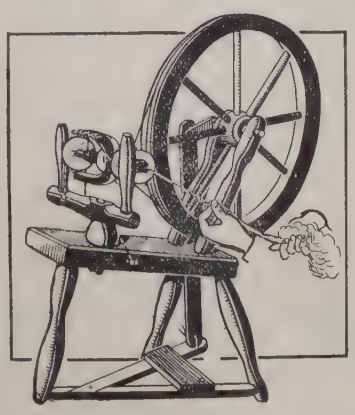

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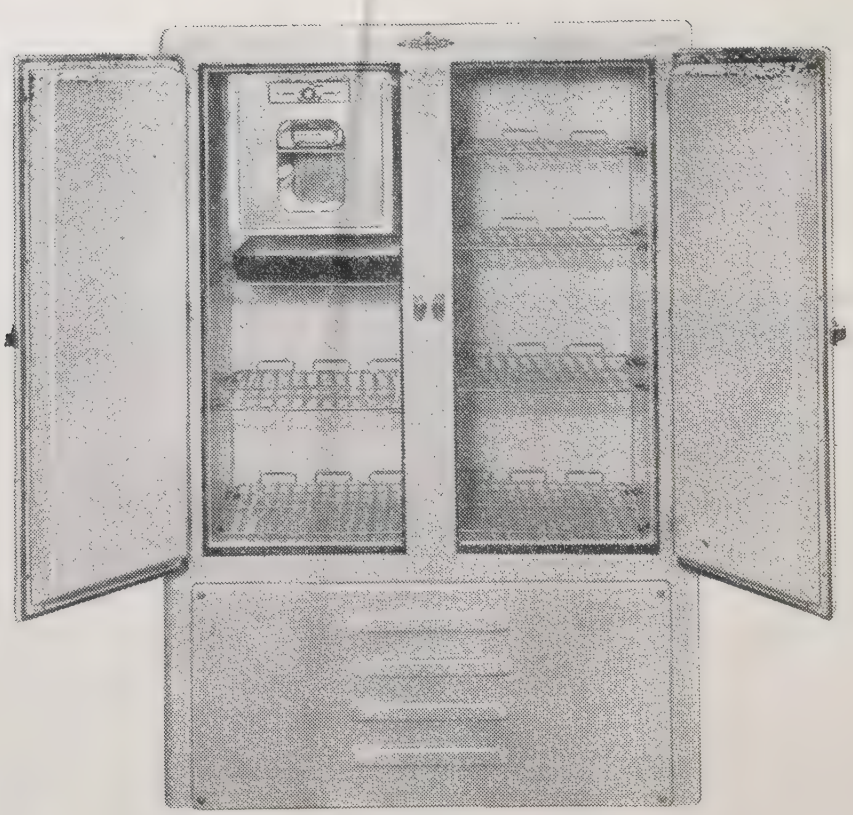

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FRIGIDAIRE NEW ZEALAND

DIVISION OF GENERAL MOTORS NEW ZEALAND LTD.

Mary's at - Home -

I HAVE been pondering "Holiday Memories"—and wondering about the ways different folk have of preserving them. Once upon a time, of course, it was by snapshots. (Though I always felt snaps were hopelessly inadequate, to attempt to capture the sparkle and joy of a holiday.) But now, films are things of the past. I did, once, see an account of holiday memories worked sampler-fashion, on a strip of linen, and framed. Nothing elaborate, of course, but house and trees and other items drawn crudely, kindergarten-style, and then outlined. It would be fun to do. But in my own case, having just had a rather specially pleasant holiday that had to be expressed in people, and hills, and trees, and skies, I needed some other means of doing it. So I took a new exercise book, and collected scraps of poetry and prose, with here and there an appropriate picture, all recalling some vivid joy of my holiday—and on the opposite page, wrote just what the recollection was. It has been a fascinating task, and a satisfying one. Some day you shall see it, and catch something of the joy it has crystallised for me.

A special friend, camping in the bush, writes thus, on a rainy day—"As I walked, I noticed the different ways the raindrops hang on various leaves. On the totaras they seem to be pierced by the green spines, on the manuka to be tangled in short green hair, on the kowhais, suspended beneath each small leaf, and here they tend to become the shape of the leaves. A grand new game—you try it, next time you walk-in-rain!" And to-day is the ideal day to begin! Coming?—**London Lass, Wellington.**

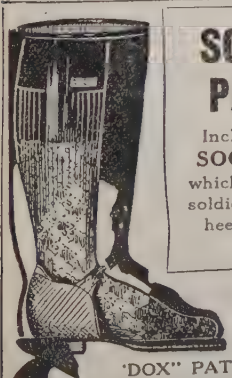
WHILE I was living in a rural area I was greatly impressed by a deed of neighbourly love and understanding. Mrs. A. endeavoured to come across two or three times a week to assist Mrs. B. with her small children, a family of four. Two of them are not at school, and it is these tiny tots who call for her special attention. She either takes them over to her home, or if it is wet, occupies them in their own home, while their mother gets an opportunity to rest, or have at least two hours which she can call her own. Mothers of young children will readily appreciate such a practical application of sympathy and help. Getting out of ourselves and understanding the difficulties of others certainly requires more than mere words. They need to be translated into action, and "deeds not words" should be our slogan. Loving our neighbour in a practical way costs us something of ourselves, our time, our energy, our thought, and, yes, even sometimes our money. Kindness originating in the mind, translated into active assistance, causes us to put ourselves in another's position—we feel as they feel—and in truth we are then "loving our neighbour as ourself."—**Michie, Dunedin.**

I HAD a lovely pile of English magazines this week, one of them the big "Woman's Journal." In it is a lengthy article on the doings of our Princesses. We are always sure of a laugh when Princess Margaret has anything to say—she is the comedienne of the family. This story tells of their reading—they are both very fond of reading, and have a free hand in their choice of books. One day Princess Margaret's nurse saw her deep in a gaudily-backed magazine, and she said "Where did you get that—is it a penny dreadful?" Princess Margaret looked up, and hugging the paper tightly in exaggerated delight said, "No, it's a fourpenny lovely!" Can't you just imagine her?—**E.T.G., Auckland.**

MY small brother, aged three and a half years, was taken by my mother to visit an old and very religious aunt. Tea was ready, and when everyone was seated, Master Three-and-a-half began to eat. Aunty was shocked, and exclaimed "Just wait. We'll have grace first." And to the surprise of everyone, he looked up and said "I don't want any grace, thanks. Bread and butter will do me." Needless to say we went down a hundred per cent. in Aunt's estimation for having neglected to teach our young hopeful to say grace.—**Grace, Kaikohe.**

RECENTLY a Field Ambulance Unit "Manoeuvred" themselves into our district one evening. The word went about, phones buzzed, and by 9 p.m. ladies were arriving at the hall with well-filled baskets. The men put on a tip-top impromptu concert, then everyone joined in the dance to the bright music from piano, guitar, accordeon, harmonica and ukelele, all played by the visitors. Some danced in their heavy boots, others had shoes, but some tripped the light fantastic in their stockinged feet! I laughed to myself when my thoughts flew back to other occasions when we had danced the same dances, but in what formal attire—frills and feathers! Everyone seemed happy, and from the Colonel to the cook, they all said thanks for a jolly evening.—**Laurel, Feilding.**

THERE is an autumn touch in the air just now, and I wonder do you love this season of the year as much as I do? It always seems that it tells us of a resting period before the great awakening, which brings me to "Tiggetty Boo's" letter "In God's sight no one ever dies." I'm sure of that, too, and have been so since childhood days. I don't like mournful funerals, because to me it is wrong to mourn, and after all, it is our own sorrow we mourn, a kind of self-pity. I remember a beautiful child dying when I was a child,



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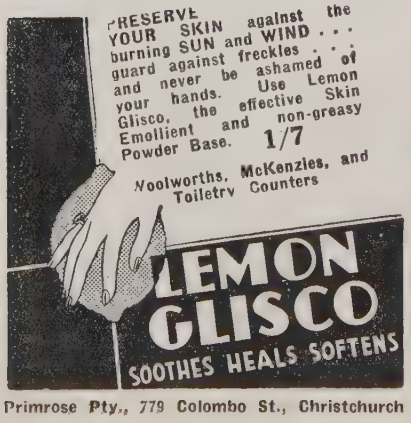
and her parents let all the children sprinkle all kinds of wild flowers in the coffin and in the grave; we wore our pretty frocks, sang nursery songs, and although not "gay" the parting was not sad. They fully believed that their dear child was happy. The following Sunday we were told by the Minister to look upon such a parting with joy and thankfulness, and to look after any living child who needed help or care, bestowing our love on them, saying that it was our duty to our child playmate. I often played with her in imagination, and it was years before I lost her presence about me.

Have you ever been acquainted with a child who has been brought up without a parent's love? How awkward that child is, and how shy to show affectionate embraces. To me it is a sin for any child to miss the love of home and parents; even if they are foster parents, that is far better than to know no one. I realise that orphanages fill a useful purpose, but I'll be glad if our new order makes them unknown, and I am convinced it will. When we women stop and think, then things will alter. I wonder how many women stop, look, listen and think during their busy days? Fifteen minutes a day is all that is required to tune in to all good things, remembering that thoughts are things, and can and do bring their own reward.—**Susannah, Cambridge.**

I HAVE been busy lately with the harvesting, etc., and each year it becomes more difficult to obtain labour. On the farms we do notice it. Paddocks which should have been sown down in young grass are growing nothing but weeds. And the youths who are generally available to assist are in camp. Surely boys of 18 to 21 years are not necessary to make into soldiers? What of the future of these boys? Are they going to swell the ranks of the unemployed, without a trade? One sometimes wonders is this all we can hand down to our younger generation after 100 years of progress? Domestic duties for our girls are also a thing of the past. One of my neighbours had her fourth baby in five years, and she is unable to carry on, but there is no help available. This doesn't fit in with "The hand that rocks the cradle rules the world." Things certainly need a lot of adjustment.—**J.A.F., Invercargill.**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OUR farm is well overgrown with that curse of the farmers, blackberry. However, it is an ill wind that brings no good, and I am making the most of them. The house gets but scant attention, and off I go armed with billies and baskets. We must make hay while the sun shines, or rather gather fruit while we may. Scrubbing and polishing can be done when the days are dull, and need brightening up. I just love to get out in the sunshine, and pick and pick at the luscious bunches of shining ebony. Home again with a full basket to make into jam, or to preserve for the winter. And how thankful I am that we are allowed sufficient sugar for jam making. It would go hard to see all that lovely fruit going to waste. We cut out having sugar in our tea—a terrific effort I might add, involving much self-discipline—so that we could make more jam. Also I make it with the half amount sugar method, and a pinch of salt. The results have all been excellent.—**Brynmawr, Aramoho.**

MOONLIGHT MAGIC.

Through the window steals a beam
Of silvery, jewelled light,
On my floor a pattern weaves
Of wondrous delight.
Never have I seen before
So sweet a picture-tale
As this: the smiling Mother Mary
Bending o'er the Babe.
Clearly stencilled on the carpet:
Picture of a Boy
Lying on the manger pillow,
Smiling in His joy . . .
Breathes a wind, and stirs the curtain,
Gone the picture on the floor . . .
But the moonlight made such magic
As I'd never seen before.

MY garden is now a picture with flowers of so many different hues in bloom. Yes, I love walking in my garden now, and waiting and watching for new flowers to come into bloom. In one bed this year there was a mystery plant—where it came from I do not know, but it flowered this week, and it is a Jockey Cap. But just for one day only it is a thing of beauty, and then it withers away. The beds of gladioli are dear to my heart, and each day there are fresh blooms. The dahlia beds are a joy from the tiniest flower to the largest. The roses have been flowering for ages. I love roses, don't you? But I have never seen such gorgeous roses as I saw at Queenstown last month. I am reading a book that delights the heart of all those who have "green fingers," a tale of gardens and their contents—"The Joy of the Ground," by Marion Cran. I am just revelling in its pages, and it is so thrilling meeting one's leafy pets in book form, and hearing all about their needs and dislikes, and receiving good advice. Marion Cran's garden must be lovely, and of course she tells us a good deal about it, and in between are woven lovely little thoughts that one rejoices to hear.—**Peggy, Pleasant Point.**

ONE is never too old to learn, and I am always interested to hear of hints and short-cuts. I have so many friends who, while having every convenience to help them in their daily work never get real pleasure out of experimenting, or making the most of what they have, and even if I say it myself, I've made "gadgeting" infectious. Have you ever thought how even a threepenny wooden spoon can make a lot of small cooking jobs easier? My best friends have been guilty of using their good stainless tablespoons for stirring everything from porridge to rhubarb.—**E.G., Auckland.**

I HAD a visitor here recently who talked in a more or less everyday manner until a second visitor arrived. Well, the second visitor never said "ow" like we say it. Instead of saying "town" she said a mixture of "tarn" and "tone." Believe it or not, Mary, this started my first visitor off, and she was as good at it or as bad at it as Visitor No. 2. Now I was always taught that any form of affectation in speech was wrong, yet what scores of people one meets who talk in an affected manner. Nice pronunciation is good to hear, but why all this distorting of words? Numbers of elocution pupils seem to do it, but it is wrong, isn't it, or am I wrong? Meanwhile I'd better stop writing and go "ote" and get on with the "coes" as it is past milking time.—**Pauline, Stratford.**

We are the third generation to farm our land, and there is still standing the house that was built of rough sawn timber as it was built about 1850. The walls are 8 in. thick, and in places still have on the walls some clay, straw and sticks that stopped the Maori bullets during those troubled times. Later another house was built, and then the house that we are now occupying. Although it was not possible for us to build a new home, we have made a wonderful difference to this home during the three years we have been here, and after all there is great pleasure in doing things for yourself, isn't there? Two things we would not have had had we built—plenty of shelter trees and a wonderful garden. We do not grow many flowers, but have plenty of interesting shrubs and some have quite a history attached to them. —**Kahikatea, Marton.**

Mary's Mixing Bowl

Economising in Eggs

I WONDER if eggs are as scarce in your part of the world as they are down here? If so you will be realising just how precious an egg can be today. Cooking for your families must be difficult these days, especially when it comes to cakes. After all, if we city people are really desperate, there is usually a shop somewhere handy that will supply our needs, but for you when the nearest shop is miles away . . . ! So this month I have selected some recipes which will save your eggs for you, and I do hope they will be useful and tasty too.

VINEGAR CAKE (Fruit)

½ lb. butter, 1 breakfast cup sugar, 1 teaspoon essence vanilla, 1 teaspoon essence lemon, 1 egg, 1 dessertspoon vinegar, 2 breakfast cups flour, 1 dessertspoon cocoa (optional), about 3 cups of mixed fruit (raisins, dates, sultanas), 1 teaspoon bicarbonate of soda dissolved in 1 cup milk.

Cream butter and sugar, add egg and mix well. Add essence and vinegar and then flour, cocoa and fruit. Lastly, mix with the soda dissolved in the milk. Cook for about two hours in a slow oven.

ONE-EGG CHOCOLATE CAKE

Good 2 oz. butter, 1 small cup sugar, 1 dessertspoon golden syrup, 1 egg, 1 cup flour, 2 dessertspoons (level) cocoa, 1 teaspoon baking powder, 1 small level teaspoon bicarbonate soda in ¾ cup of milk.

Cream the butter and sugar and add the egg. Beat well. Add golden syrup. Mix the flour, baking powder and cocoa and add to the mixture alternately with milk and soda.

GINGERBREAD

3 cups flour, ¼ lb. sugar, 6 ozs. butter, 3 tablespoons syrup, 1 tablespoon ginger, 1 teaspoon soda, 1 teaspoon cream of tartar, 1 teaspoon spice, 1 teaspoon cinnamon.

Cream butter and sugar, add syrup, add flour, ginger, cream of tartar, spice and cinnamon. Dissolve soda in 2 teacups of boiling water and add to mixture. Bake for 1½ hours in a moderate oven.

EGGLESS BROWN SPONGE

¾ cup sugar, 3 ozs. butter, 2 tablespoons golden syrup, 2 tablespoons cocoa, 1 cup milk, 1½ cups flour, 1 teaspoon baking powder, 1 teaspoon bicarbonate soda.

Melt butter, sugar, syrup and half the milk and leave it until it is cold. Add the rest of the ingredients, the soda dissolved in the rest of the milk. Bake in a moderate oven for about half an hour.

NUTTY APPLE CAKE

2 cups flour, 1 cup sugar, 3 ozs. butter, 1½ cups stewed apple unsweet (very little water), 2 level teaspoons soda, 1 teaspoon cream of tartar, 1 teaspoon each nutmeg, mixed spice and cinnamon, 3 dessertspoons cocoa, ½ cup raisins, ½ cup chopped walnuts.

Cream butter and sugar, dissolve soda in warm apples and then add dry ingredients. Cook in a flat tin for about ¾ hour. Leave in the tin until cool.

CHOCOLATE DATE BISCUITS

1 cup flour, ¼ lb. sugar, ½ cup chopped dates, 1 teaspoon baking powder, 1 tablespoon cocoa.

Cream the butter and sugar. Add the dry ingredients and mix with about 1 tablespoon milk. Roll about a quarter

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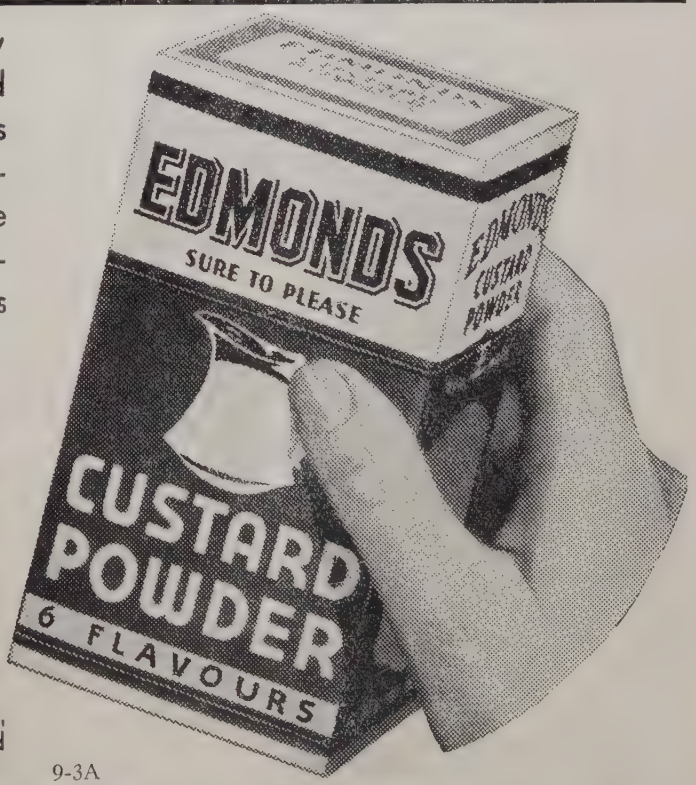

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of an inch thick on the oven slide (cold) and cook about 20 minutes in a moderate oven. Ice with chocolate icing and cut while fairly hot.

AFGANS

7 ozs. butter, 1 oz. cocoa, 2 ozs. cornflakes or crunched wheeties, 3 ozs. sugar, 6 ozs. flour, a pinch of salt.

Cream the butter and sugar. Add the cocoa and then the rest of the ingredients. Put teaspoonfuls on a cold tray and cook for about ¼ hour in a moderate oven. Ice with chocolate icing.

APPLE AND BREADCRUMB PUDDING

Butter a piedish and put in a good layer of finely-chopped apples, a layer of breadcrumbs. Sprinkle with a small teaspoon of cinnamon, a dessertspoon of brown sugar and then put some knobs of butter on top. Repeat this process until you have a pudding of the required size and cook in a moderate oven for about half an hour.

GOLDEN PUDDING

Rub a tablespoon butter into 1 breakfast cup of flour, add 1 teaspoon baking powder, pinch of salt. Mix into a light scone dough with milk. Lightly flour the hands, roll into a ball and drop into a greased pudding basin. Bring to the boil two tablespoons golden syrup, 1 cup boiling water, 2 tablespoons butter, and pour over the mixture in the basin. Do not cover the bowl, but put the lid on the saucepan and steam for about half an hour.

PLUM PUDDING

8 ozs. flour, 4 ozs. fine chopped suet, 2 ozs. brown sugar, 2 ozs. treacle, 4 ozs. currants, 2 ozs. raisins, 2 ozs. peel, ½ teaspoon spice, 1 heaped teaspoon baking powder and milk to mix.

Prepare fruit. Mix all the dry ingredients together, mix treacle with a little milk and stir into the other ingredients. Add enough milk to make a stiff batter. Grease a basin and fill with mixture or tie in a pudding cloth dipped in boiling water and dredged with flour. Boil for about three hours.

WALNUT WAFERS

4 ozs. butter, 4 ozs. treacle, 4 ozs. sugar, 1 level teaspoon baking powder, 4 ozs. flour, 3 ozs. chopped walnuts.

Mix butter, sugar and treacle together, and add dry ingredients. Put in small teaspoonfuls on cold tray, allowing plenty of room to spread. Bake in a moderate oven for 10 to 15 minutes. When cold put in an airtight tin to keep crisp.

SCOTCH SHORTBREAD

8 ozs. butter, 6 ozs. castor sugar, 14 ozs. flour, 2 ozs. rice flour, 1 teaspoon baking powder.

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Cream well the butter and sugar. Sift in the flour, rice flour and baking powder. Knead well together. Divide into two, roll out or knead on to a sheet of white paper. Pinch round the edges with the finger and thumb. Prick all over with a fork. Place with the paper on the cake-tray and bake in a slow oven for 40 minutes. Leave the cakes on the paper till firm.

CHINESE CAKE

½ lb. brown sugar, 2 ozs. lard, ½ teaspoon salt, ½ teaspoon cinnamon, ½ teaspoon ground cloves, ¼ pint of hot water, ½ lb. flour, ½ teaspoon bicarbonate of soda.

Size of caketin required about 6in. x 3in.

Beat together the lard and sugar. Add the salt, cinnamon, cloves and some of the hot water. Beat well, then add the remainder of the water, the sieved flour and the soda dissolved in 1 teaspoonful of hot water. Mix well, pour into the greased tin and bake for 1¼ hours in a slow to medium oven. This cake improves with keeping.

SODA CAKE WITHOUT EGGS

¾ lb. flour, 6 ozs. lard and butter mixed, 4 ozs. sugar, 3 ozs. raisins, 6 ozs. sultanas, 2 ozs. peel, nearly ½ pint milk, 1 teaspoon bicarbonate soda, 1 tablespoon vinegar.

Sieve the flour into a basin. Rub the butter and lard into the flour. Add the sugar, the raisins (stoned and chopped) the sultanas and the peel (chopped). Mix thoroughly, adding some of the milk, the soda dissolved in the remainder of the milk and lastly the vinegar. Put the mixture into a tin lined with greased paper and bake for 1 hour 45 minutes in a slow oven.

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